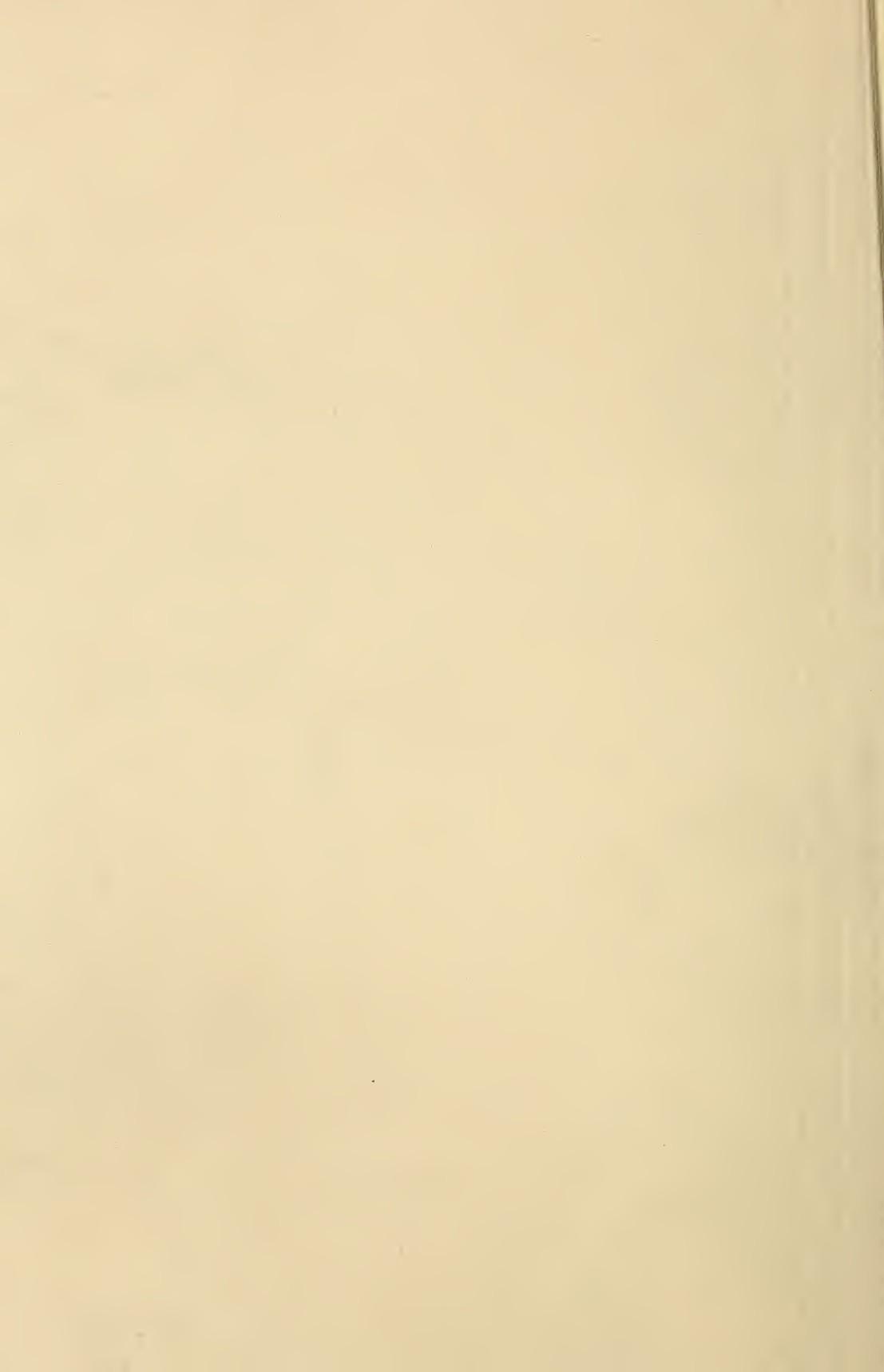


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GLEANINGS OF BEE CULTURE

A JOURNAL
DEVOTED
TO BEES,
AND HONEY,
AND HOME
INTERESTS.

ILLUSTRATED
SEMI-MONTHLY
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No. 5.



THREE QUEENS were given to a queenless colony in the expectation that two of them would be killed. All three remained peacefully together. *Leipz. Bztg.*

"THE AMOUNT of comb occupied with brood just before the flow commences is the right number of frames to have in the brood-chamber during that flow," p. 136. Well said, Bro. Doolittle.

F. T. HOOPES, p. 138, speaks of having to use both hands for a Clark smoker. How is his Clark made? All I ever saw are easily used with one hand. [I would as soon use two hands to try to write with a pen.—ED.]

IF I HAD that candied comb honey W. E. Head speaks of, p. 139, I'd melt it *very slowly*, take off the cake of wax, and eat the honey. [The solar extractor that I recommended does that very thing. It melts very slowly, and takes a long while to bring about a separation.—ED.]

DZIERZON, the grand old man to whom we owe so much, seems to possess still the vigor of youth. His name is generally pronounced *Tseertson*, in accordance with German pronunciation. But Dzierzon himself says the name is of Polish origin. As nearly as it may be given in English, he pronounces it *Cheer-zone*.

A RECENT STRAW says *Die Noerdlinger Bienenzeitung* championed the Dickel theory, and then died. That does not prove the Dickel theory false, for if it did the Dzierzon theory would be proven false in the same way. Nearly half a century ago the same paper championed the Dzierzon theory and suffered in consequence.

MR. EDITOR, you say you'd like a smoker to send a continuous stream of smoke. Go to Germany and you'll find one acting automatically. [Are you joking about two-legged smokers, or do you mean some sort of automatic affair of springs, leather, cogwheels, tin, bolts, screws, etc.? If you don't, then you should have labeled this a joke.—ED.]

NOW YOU have done it—letting Stenog say what he did, p. 119, about Dickel theory. Perhaps you'd better offer Greiner a column to defend the theory, and say that ends the discussion. [The European papers seem to regard the Dickel theory as now devoid of interest, and hence we may conclude, I think, it has run its course.—ST.]

I LEARN that some think I am unfair to the Dickel theory. I much regret that any word of mine against it has found its way into print. I do not believe American bee-journals ought to take up room discussing it while it is being so fully discussed by German bee-keepers who lead the world in careful investigation. We can afford to wait till they settle it, as no change in bee management will come from its acceptance or rejection.

SPEAKING of cellar bottoms, I suspect you're right, Mr. Editor, in saying that much depends on the soil. Adam Grimm showed me a cellar with cement bottom made especially for bees. Next time I was there he said the cement was a mistake. A room in my cellar with cement floor was meant for bees. I used it one winter, but since then have used a room with clay bottom. And yet I don't understand why cement isn't all right.

J. M. RANKIN is reported in *American Bee Journal* as saying that five colonies were affected with foul brood from a diseased colony piled up with them in the cellar. [This seems very probable. Foul brood is communicated very commonly by bees in the apiary intermingling from one hive to another. When the hives are closely piled in the cellar, the inmates are almost sure to work from one entrance to another, to a limited extent.—ED.]

I MAY SAY to friend Coppin, p. 137, I have the same arrangement he has, only I don't keep vegetables in the room with my bees, and years ago used his plan by opening the door from dining-room to cellar. Having tried both plans, I much prefer the fire in cellar. Has he tried both plans, or is he only theorizing? Up to this date, Feb. 19, there has been no fire, 40° having been the lowest notch; and I don't expect to start a fire unless there comes a time when temperature is about 50° inside and out, and then a fire may be made to start circulation.

TAKING ADVANTAGE of my youth and inexperience, Mr. Editor, you always try to shut me up when I say any thing about long tongues. Now here's my chance again. If Prof. Koons found (p. 132) that No. 6 had a tongue just one-sixth longer than No. 12, don't you believe that, by always measuring and breeding from the longest tongued colonies, the length of tongue might be materially increased? Yes, I know I've already said a good deal about it, but then you know I have a pretty long tongue myself.

H. GUEHLER, the German honey-dealer, perhaps leads the world in his line. He has 1600 places of sale in Berlin and other places. In Gravenhorst's *Bzg.* he says that, because much American honey is atrocious in character on account of lack of intelligence and cleanliness in handling, it is generally considered adulterated. But after very many analyses he asserts it is just as pure as German honey. Of all the lots he has examined, only three have been adulterated—one German, one Hungarian, and one American.

REPLYING to Mr. Gibbs, p. 139, a frame 8 in. long and 12 deep would not be better than the other way, because it would give too small surface for supers, and would take 50 per cent more time and 100 per cent more trouble to lift out the combs. [A shallow frame has the advantage of convenience in handling as well as giving a large super area; but theoretically it is not as good for wintering bees as the deep or square frame; but practically, in the hands of a good bee-keeper, bees seem to winter as well on one frame as the other.—ED.]

"IF THEY [bees] are given larvae all of one age, and that a suitable age, *all* of the queens will be good queens. If there is any one thing about queen-rearing that I know, this is one of them."—Editor Hutchinson. Let me put, alongside of that, one of the things I know that I know. I have given to queenless bees larvae all of one age, and that a suitable age, under circumstances favorable for rearing good queens, and some of the queens were good and some were very poor. [When doctors disagree, who shall decide?—ED.]

A RED-PePPER pod placed on the coals in a smoker is recommended in *Deutsche Imker aus Boehmen* to quiet bees. [To my notion it would be too much of a good thing. A reasonable amount of smoke will drive bees, and why should we make the smoke so pungent as to be positive cruelty to animals? The moderate use of a whip for a horse is not punishment, but to assist in driving. The moderate use of smoke is not to cause the bees blinding pain, but to gently induce them to get out of the way, or to quiet them if they show fight.—ED.]

I STAND with Greiner, p. 131, in not seeing any noticeable let-up in the breeding of bee-moths throughout the season. From the time warm weather comes till autumn frosts, I don't believe there's a time when you will be safe from moths if you expose a set of brood-combs without bees. Catch a female moth any day in the summer, pull off her head, and in a

minute she'll begin to feel around with her ovipositor; and if you let it reach the crack between your thumb and finger she'll lay eggs. Possibly, however, each single moth has its two broods.

"YOU WILL REMEMBER that he insisted that a worker-bee should be designated by the feminine pronoun," quoth ye editor, p. 117, referring to this veracious correspondent. Steady, Mr. Editor; did I ever object to calling it "it"? I only insisted, insist now, and expect always to insist, that if sex is intimated it must be "she" and not "he." I revolt against the absurdity of saying of a laying worker, "*He* laid eggs." [Perhaps you never objected to calling it *it*; but it was your recommendation and practice to refer to the worker bee as *she*; but what pleases me is to see you now fall into line and designate her as *it*.—ED.]

W. H. PRIDGEN says in *Amer. Bee keeper* that those who condemn breeding for color "are guilty of the same to the extent of keeping up their chosen standard." Seems truth in that. Fact is, color is about the only outside tag we can have to stand for good qualities within, so it's right to breed *to* color; but breeding *for* a different color without regard to other characteristics is quite another thing. [So far as I know, no one has condemned breeding for color, providing other good qualities were not lost sight of; but a cry has been raised against making color the *only desideratum*—something that has been done too often.—ED.]

NOW THAT immediate danger of violence to English spelling in GLEANINGS is no more, and that Mr. Wanzer, who wants spelling progress to "emanate from our public schools and colleges," may not be too severe if he should happen to see "honor" for "honour," or "clipt" for "clipped," it may be well to say that the changes he opposes with so much earnestness have not emanated from a few cranky ignoramuses, but *have* emanated from colleges. The changes were recommended by some of the most eminent scholars of America and England, among them professors in Yale, Harvard, Columbia, etc., in this country, and in England in Oxford and Cambridge.

COLORADO BEE-KEEPERS seem down on short top-bars with end-spacing—say they drop down. I've just been out to measure. When one end remains stationary the other end must be shoved to one side $3\frac{1}{4}$ inches before it drops. Possibly there is a little difference, due to my top-bars being $1\frac{1}{8}$ wide at end. I wouldn't go back to long top-bars for a good deal. [I found the trouble with short top-bars in Colorado was due to the fact that there were two makes of hives in use, both Langstroth, but one make $\frac{1}{4}$ inch longer than the other. This, of course, caused trouble. It is unfortunate that standard Langstroth measurements are not adopted by all manufacturers. But however this may be, a principle right in itself should not be condemned when obviously the trouble is somewhere else.—ED.]

USING language correctly is a hard job for me. In a late Straw I said, "Some foundation made of pure wax ten years old was very brittle." The editor (quite excusably) understood the foundation was made ten years ago. Let me try again: "Some wax ten years old was made into foundation, and the foundation was brittle when first made." According to the editor this could not be; and it is quite possible that some one in Germany has my trouble about using language. [I can not understand why wax ten years old should give a hard brittle foundation unless the wax during melting was heated too hot or the sheets of wax immediately after dipping were chilled too soon. Of course, by the new process there is no chilling of the wax; and this, together with the fact that the product is subjected to about 500 lbs. pressure to the square inch, makes a homogeneous, tough, yet pliable product.—ED.]



Winter still maintains his reign—
Ice and sleet and snow again;
Bees are fastened in their hives,
Waiting there till spring revives.

AMERICAN BEE JOURNAL.

The issue for Feb. 22 starts out with a biography of D. H. Coggshall, of West Groton, N. Y. A view of Mr. C.'s residence and one of his apiary are given—the same that appeared in this journal on pages 892, 893 last year. As Mr. Coggshall is so well known to our readers through these columns, there remains nothing more to be said except that he, like his brother W. Lamar, is a good example of what can be done in one line by being always at it.

In regard to extracting too closely, "Old Grimes" says:

In order to get the most out of an extractor some bee-keepers extract quite an amount of larvae with the honey, but here is a case where the operator would better be content with a little less. Old Grimes learned a lesson many years ago that cured him of this trick. There was quite an amount of said larvae in all stages of development in the strainer, and we all know that they never look very nice, and we prefer that our customer's should not see them; but there came a city lady who was being shown the mysteries of the bee-business; everything was new and very interesting to her until she came to the strainer with the white larvae in it, and the honey running over them. Then and there, from the remark she made, she forgot all the rest she had seen, and only remembered "those worms," as she termed them, and thereafter she never would allow a drop of liquid honey to pass her lips—she knew just how it was extracted. Although but a very little of our honey had been in contact with the larvae, it made no difference, it was all alike to her.

If much larvae is thrown out with the honey it will injure the flavor. A good way to overcome the larvae trouble is to return to the hive all combs having unsealed brood. It may be a little trouble and a delay in the extracting of that comb, but it pays. Another way out of the woods is to use the queen excluding honey-board; all honey stored above it is sure to be

free from larvae, and for that reason it is used quite extensively in our apiaries.

This whole article on extracting ought to be in pamphlet form, and read by all who own an extractor.

Mr. York deserves great praise for the excellence of the mechanical part of his journal. Its freedom from typographical mistakes is quite in keeping with the high moral tone of the journal.



BRITISH BEE JOURNAL.

Mr. A. H. Cowan, son of Thos. W. Cowan, was married in Loomis, Cal., Jan. 9, to Miss Mary Owen. Mr. Cowan is engaged in raising oranges and peaches on a large scale in California.



In speaking of some people who should not keep bees, the editor says:

Then there is a class of unpromising candidates for success in the pursuit who possess no natural aptitude at all for it, and who should never attempt to engage in it. One of these well accounted for his failure when he remarked to us: "My bees were awfully savage the other day; but Jack was as good as his master, and I gave it them hot!" And very hot indeed had he given it them, for on lifting the quilts the number of dead bees we saw lying with their crushed bodies flattened on the top bars fully attested the warmth of his "handling."

Here is another good point:

It is just as necessary that the bee-keeper should know when to leave the bees alone as it is to do the right thing at the right time; and he who persists in carrying through operations at the wrong time, and while the bees determinedly resent it, not only acts unwisely, but lays the foundation of further trouble. Gentle handling at all times, and judicious waiting for another chance to carry out operations if the bees are disposed to be vicious, will have a remarkable effect in preserving the bee master's control of the apiary, and in maintaining that order therein which is so necessary for comfort and success.



Rev. George Raynor for more than twenty years dispensed with smoke and smoker, using instead a solution as follows: 1½ oz Calvert's No. 5 carbolic acid; 1½ oz. glycerine, 1 quart of warm water. The acid and glycerine are to be well mixed before adding the water, and the bottle to be well shaken before using. But the editor says he prefers a good smoker and a bit of dry fusitand.



A correspondent at Durban, Natal, South Africa, near the seat of war, says:

There is a formidable black ant, about the size of the common house-fly, that comes in an army, and then a battle royal takes place, the slaughter on both sides being tremendous, and the fight lasting for a day or two; but the ants have a great advantage at night, and eventually win and carry off honey, brood, and bees, entirely destroying the stock.



An English weather report for January is not without interest. Rainfall, 3.77 inches. On the 6th, almost one inch fell. It rained 21 days. Lowest temperature, 23, on the 6th; highest, 50 on the 24th. Frosty nights, 17. Sunshine, 53.7 hours. Sunless days, 11.



The solar wax extractor does good work in South Africa these winter months, the maximum temperature being 120 degrees.

Probably quite a number will agree with what the editor says in regard to stings, as follows :

We can not entirely agree with the oft-repeated assertion that "bees will never volunteer an attack," nor sting "except in self-defense." Neither is it quite correct to say that "after a little practice and experience no protection is required;" indeed, it will usually be found that in apiaries of any extent, where the bees are "natives," and possessing the grit and the healthy vigor requisite to make good returns possible, there is not that complete immunity from the risk of an occasional sting which some would have us believe. As a matter of fact, in all our acquaintance with successful bee-men we never yet found one who hadn't a veil somewhere in the house, and who did not wear it at one time or another. Personally, we almost invariably have our veil on when working among bees, not pulled down over the face, but ready on the hat for instant use on an emergency. It lessens the risk to have it so, and a sting in the eye is at no time agreeable.



REVUE INTERNATIONALE.

In speaking of the death of the oldest bee-journal in the world, *Nordlinger Bienenzitung*, the advocate of the Dickel theory, and edited by Mr. Dickel himself, Mr. U. Gubler, an eminent French writer, says : "This was the journal that was rendered famous by the publication of the Dzierzon theory; and it is a curious thing that the denial of this same theory is what has cost its life."

This journal is also printing a very interesting series of articles on the anatomy of the bee. The present article is a complete exposition of the Dzierzon theory, written by Thos. W. Cowan in English.



Mr. E. Bertrand, editor, gives over two pages in his January issue to a description of the A B C book and the Home of the Honey-bees. As it is a translation of what appeared in our Nov. 15 issue we will not reproduce it here. But in winding up, Mr. Bertrand says : "We have tried, in the preceding, to give an idea of the importance of the Medina establishment, which is, undoubtedly, in its particular line, the largest in the world. It remains for us to congratulate the members of the firm for the notable part they have taken in the development of apiculture, and especially for the services they render by their beautiful and useful publications."



GREASY SECTIONS.

Not Caused by the Queen or her Bees, but by a Poor or Slackening Honey-flow.

BY DR. D. A. M'LEAN.

An article in the Dec. 15th issue of GLEANINGS, entitled "Greasy Sections," tallies so closely with well-established convictions that I have held for several years, that I wish to lend my assistance to the writer in his laudable endeavor to "sit on" Dr. Miller and other writers who have been advising the killing of

the queens of those colonies that give that kind of honey. Had I followed their advice I should before this have killed off, at various times, all the queens in my apiary at least once, and some of them probably several times.

From a careful observation for a number of years I have determined, to my own satisfaction at least, the cause of the honey presenting the watery or greasy appearance. I believe the writer of the article spoken of has mistaken an indirect or remote cause for the immediate one. The immediate cause (in my opinion) is a sudden partial failure of the honey-flow.

Let there be a free honey-flow with good weather, either hot or cool, the bees all busy, and honey coming in fast, no sections with the thin greasy-looking cappings will ever be found, but all will be nice and white, because plenty of wax is secreted and used. But let a spell of very hot dry weather begin and continue for some time, or equally effective, as I have many times observed, showery weather for a week or ten days, and you may look with confidence for the "greasy" cappings. The effect of continued hot dry weather and of showery weather on the honey supply is the same; viz., to reduce the amount. Now, your honey-bee is an extremely provident and conservative worker. When honey is coming in freely it uses it freely to make wax for the cappings; but as soon as the supply begins to diminish, it begins to use less for wax, and uses only sufficient to hold the honey safely in the cells; and the thin cappings, resting down on the honey, absorb some of it, expel any air that may have been inclosed, and look water-soaked or greasy. I have watched this effect so many times that I can tell almost to a certainty from the character of the season and the honey-flow where and how much of the thin cappings I shall find in a super before taking it off. For instance, if my super was, say, half filled, and capped during the free flow, and the other half during a scanty flow, I shall find the center sections nice and white, because they are usually capped first, while those on the outside will be more or less lacking in amount of wax over the cells; while, on the other hand, if the super has been placed on the hive a short time before the shortage begins, the middle sections will be "greasy;" and if a good flow comes afterward, the outside ones will be nice and white. There will, of course, be all kinds of variations in this matter according to the stage of completion of each particular super; but my proposition is that the honey that is capped during a scanty flow will, much of it, be "greasy."

The editor says he does not remember seeing watery and white honey come from the same hive. I wish to say that I take it from the same hive and from the same super every season, and I feel confident that, if I did not see the inside of a single one of the supers until the close of the season, I could guess very closely the amount of greasy sections I should have from the character of the flow throughout the season.

You will notice Mr. Whitney says in his article that the first and third cases of sections were stored during a rapid flow, and while the

weather was cool, and that they were *white*; while the second one that was stored in extremely hot dry weather was "greasy;" and although he says there was a fairly good flow from sweet clover it was probably much less than during the cooler weather.

I can not believe the hot dry weather to be more than the indirect cause by lessening the honey-flow, because I have so many times seen the same result from wet weather. I live within five miles of the foot of the Rocky Mountain range, and our showery season begins about the first of July. The forenoon will be warm and bright, and the nectar plentiful in the alfalfa bloom; but by one or two o'clock a dashing thunder-shower is in progress, pretty thoroughly washing the nectar from the flowers, and this will recur day after day, sometimes for ten days or two weeks, thus giving the bees but two or three hours per day for honey-gathering, as it takes a goodly share of the interval between showers to recover from the washing, and begin to secrete nectar. These conditions prevailed during the last season, and the character of the cappings of the honey told with perfect accuracy where the restricted honey-flow began and where it ended.

Some four years ago the opposite condition prevailed. After about ten days' fine flow the weather became very hot and dry, and remained so for some time. The honey-flow grew less and less, until storing above finally ceased. The result was, a considerable share of my honey was "greasy."

From these observations I am led to believe that the hot dry weather acts as a cause in the same way that the wet weather does, by restricting the amount of honey gathered.

I thoroughly agree with Mr. Whitney in saying that the honey with the thin cappings is the choicest honey in the hive; and it is so because it is gathered slowly, and is thoroughly ripened before being capped.

Fort Collins, Colo., Dec. 22,

[On my recent trip to Colorado I called at the doctor's office, but he was not in. As my train was to come soon I did not have the opportunity of seeing him personally; but well do I remember those towering Rockies that he speaks of on the very border as it seemed to me of the town.

While the doctor seems to give convincing proof to the effect that the condition of the honey-flow—that is, the weather and the amount of nectar in the fields does have a direct influence upon color of the cappings—yet here is something from another Coloradoan, Mrs. Barber, one of the most prominent and successful bee-keepers of the State. Her evidence seems to be equally conclusive that the trouble lies largely with the queen. While it is possible that both conditions of weather and the stock (the queen) may have something to do with greasy cappings, yet it is more than probable that either one or the other writer is nearer the truth.

It is exceedingly important to know the real cause. If the queen is responsible for the discolored honey, then the remedy is easily

applied. If she is not it is folly to destroy her, and we must be content to take what we can get.—ED.]

QUEEN THE CAUSE OF SOILED SECTIONS.

Whitest Honey from Golden Italians.

BY MRS. A. J. BARBER.

I have just read the article on page 929 about greasy-looking sections, and their being caused by the peculiarities of the season. Now, I have become quite a crank about queens, and I hold the queen responsible for almost every thing that goes wrong—greasy sections and all.

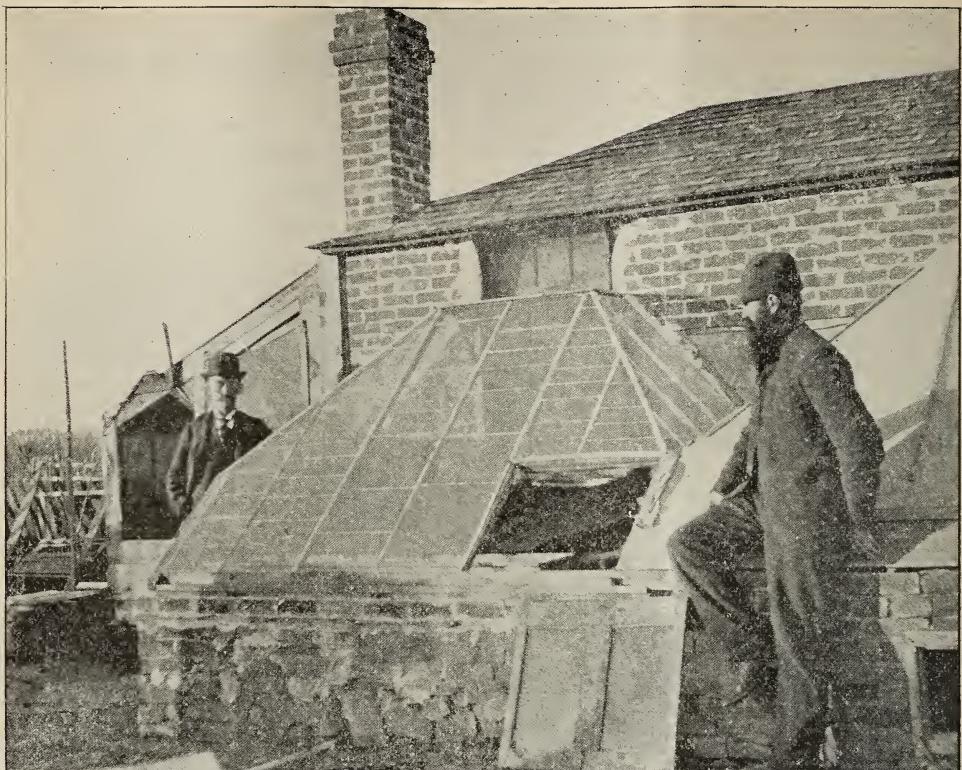
For the first few years that I kept bees I noticed that sometimes we found the sections nice and white, and sometimes the capping looked greasy. I did not pay much attention to the cause, as there was a good market, and all the honey went at the same price. Five years ago I sent to a queen-breeder in the South for six queens. I got them late in the season, so they cost me only 30 cents each. One was a black, four were leather-colored, and one a yellow. The next season I watched these colonies closely to see whether they were any better than my old stock of leather-colored Italians. I soon noticed that the yellow queen had remarkably white cappings, and that they were smooth. The black queen had white cappings, but the bees built little spurs from the face of the honey, and fastened them to the separator, thus spoiling the honey for market. The leather-colored ones were like my old stock—some capped white and some greasy. The yellow queen's cappings were so unusually nice that, as we were beginning to have a demand for white fancy honey, I concluded to see if it was only an accident that her honey was nicer than the others'. I raised 14 queens that season from her, and found that nearly all of them produced bees that capped the honey as white as paper.

The next season I requeened nearly all my home apiary. I have taken premiums for fancy honey right along, and I believe I owe it to those queens. My experience is that those white cappers produce more honey, too, than the others. I have two colonies that produced six supers each (144 pounds) this season, when some of the others did not store more than one. I have no queens to sell, but I am convinced that that thirty-cent queen has been worth more than a hundred dollars to me.

I have one of Hutchinson's queens; and if her stock is any better than my white cappers I shall say she is a "hundred-dollar" queen. I think about nine-tenths of the home-apiary comb honey this year was fancy white, while at the out-apiary, where I have not paid so much attention to the queens, I had nearly half second grade. I am going to requeen from the Hutchinson queen down there, and note the result, and compare notes with the yellows at the home apiary.

I don't believe we can overestimate the importance of the queen.

Mancos, Col.



AIKIN'S SOLAR WAX-EXTRACTOR, SHOWING FRANK RAUCHFUSS AND R. C. AIKIN. SEE EDITORIAL.

[Although I did not have the pleasure of meeting Mrs. Barber, yet I heard of her often on my trip through the State, and so I concluded that she was one of the most successful bee-keepers in Colorado. If she is correct in her theory (and she will be backed up by no less an authority than G. M. Doolittle), I imagine she would have quite a demand for those yellow queens. She says she has no queens for sale; but I hope she will sell just enough to give a few of the breeders some of that desirable stock. Yellow queens and yellow bands, comb honey with pearly-white cappings, and lots of it, leave little else to be desired in good breeding stock. If you decide to sell any queens, Mrs. Barber, please reserve a good one for the Root Co.]

In relation to this whole difficulty with greasy comb honey, I would say the matter is still open, and we shall be glad to hear from others as well as the principals in the debate. Hello! here is something on the other side again—[Ed.]

QUEEN NOT THE CAUSE OF GREASY SECTIONS.

Hybrids.

BY W. M. WHITNEY.

Editor Gleanings:—I note what you say in footnote to my suggestions respecting greasy sections, and have to say that my experience has been similar to yours; but were not the colonies laboring under quite different conditions?

This subject of greasy cappings becomes a very interesting one to me, and I think it might be a profitable study for bee-keepers during the coming season; make careful observations respecting strength of colonies; the degree of ventilation; whether the hive is exposed to the sun or is in the shade; what the season is—wet or dry, hot or cold, giving dates, etc.

My hives are all numbered, and a record is kept in a book prepared for the purpose, and it affords me great pleasure to study and note the various operations as they occur. I feel so confident that the queen is not at fault that I will agree to take all such Italian queens that may be sent me, and use them as breeders.

Now, I am just as confident that there are bee-keepers who are just as well convinced that I am wrong in this matter as they can be, and that, when spring comes, will "pinch the head" of such queens. If all such persons will kindly mail to me all such queens, properly put up, I will pay 25 cts. each to compensate for trouble of caging and mailing.

Locality has so much to do with honey production, who knows but that it has something to do with greasy sections? Brother bee-keepers, let us try it. Send on your queens and save a quarter.

They are just the kind for the extracted-honey producer, giving him absolutely ripe honey from the extractor, weighing 12 lbs. to the gallon, and ready for shipment. Yes, send along your queens. We are breeding such.

Oh! there is another matter I wanted to re-

fer to, which nearly escaped my notice. It is this: Stenog, on page 919, referring to population of Jamaica, copied from *American Bee-keeper*, gives us "122,000 hybrids." This item excites my curiosity. Is this a cross between man and a higher or a lower order of being? How long would it take, under proper management, to depopulate the island? This may be a branch of anthropological research which may become a very interesting study. Tell Stenog to tell us some more about it.

Kankakee, Ill.

[The word "hybrid," in the case cited, meant simply cross-breeds or mongrels. It is by no means to be confined to the crossing of distinct species or genera, as the horse and ass, as is generally supposed. In the latter sense there is no such thing as a human hybrid. The children of different races of the human family are always an improvement in some respects over either parent. The Chinese have always lived by themselves, and are now practically the same they always have been; while the Anglo-Saxon family, a cross, has revolutionized the world in a comparatively short time, and made nature herself tributary to its comfort.—STENOG.]

A FLORIDA RAMBLE.

More Frosts in Northern Florida.

BY MRS. L. HARRISON.

Mr. Editor:—Would you like a rambler in Florida as well as in California? I've lately been rambling, and will tell you about it.

On the morning of the last day of January I went on board a sail-boat, to go to a point on the bay twelve miles distant. The day was cool, and there was a stiff breeze which carried us along at a lively rate, as if controlled by a mighty power, as the boat plowed the briny deep. As we sailed along we viewed the white sandy shore, upon which tall pines reared their heads, while the sand at their feet was carpeted with saw-palmetto, while the cabbage-palmetto reared their plumy heads like immense green umbrellas.

We landed at the pier, and put up at a hotel and postoffice combined. Our destination was Vernon, the county-seat of Washington County, thirty miles distant. There was a mail from there here three times per week, and I had expected to go with it to Vernon. When it came at night it was brought by a boy on horseback. The next day I tried to obtain a conveyance, but failed. Not even an ox team could be had. The night was cold, so that ice formed a quarter of an inch thick; the following night also; yet when the sun was shining I watched bees carrying in very pretty lemon-colored pollen.

The bee-hives at this place were tall box hives made of heavy Florida pine, and the bees small blacks. In answer to my queries about bees, mine host said, "Bees are no good any more; have done little or nothing for four or five years. We don't care for honey anyhow; have some now five years old, and we

prefer syrup. There was a man not far off that had a good many at one time, but got tired of them, and don't care for them any more."

When land has been cultivated a number of years it is called worn out, and is not cultivated, but allowed to grow up in wild land again. Many of these fields grow up to broom sedge, and my host had one, and every room had two brooms made from it—a long and a short one. I busied myself while waiting by making some of these brooms, and I think brushes made from it would be excellent to brush off bees from combs, being more soft and pliant than broom-corn. There appear to be two varieties of this sedge.

The second time the mail came it was in a cart, and I resolved to go in it. We arrived at noon at a log house in the woods, where a postoffice was kept. While the mail was changed and horse fed I ate my lunch in the

blooming plant in my drive through the pine woods. The mail-carrier said there were plenty of flowers in bloom during the summer.

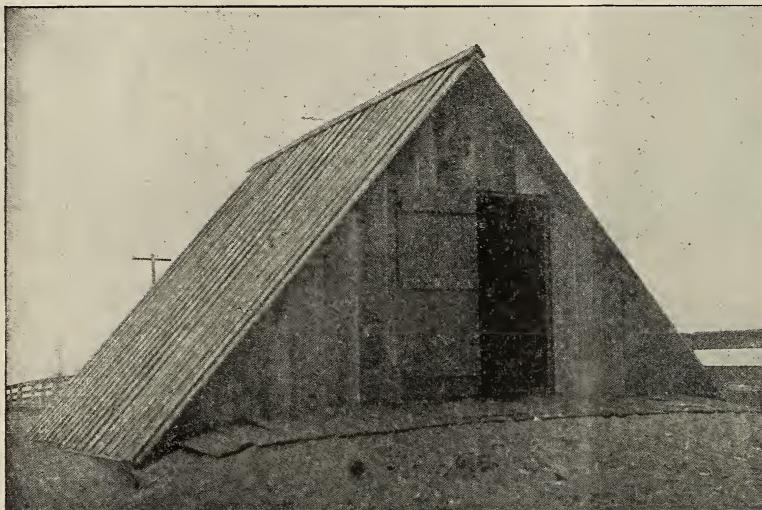
St. Andrews Bay, Fla., Feb. 17.

BINGHAM'S NEW BEE-CELLAR.

How to Construct a First-class Winter Repository.

BY T. F. BINGHAM.

The view of the roof covering my practically air-tight bee-cellars is well illustrated by the cut. It is 20 ft. wide and 20 ft. long, and, as shown in sectional view, very steep, affording a large room for work above the cellar. But, what is of more value to the bees, the room is dark. It is into this room that the cellar is ventilated, or from it the bees receive the air they use without taking it from the unwarmed air outside.



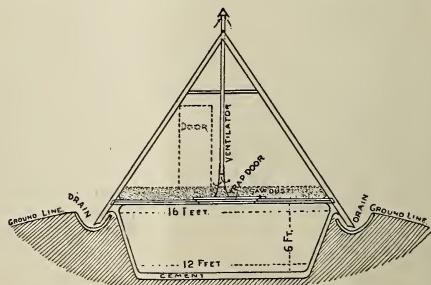
BINGHAM'S BEE-CELLAR.

soft sweet southern sunshine. A young woman came from the house; and as I talked with her I inquired about bees. Yes, they had a few, but they did no good any more; worms ate many of them up. The past seasons had been too dry for any thing to grow.

We drove twelve miles through the pine woods without passing a house, and sixty miles without meeting or passing a team. I kept watching for objects of interest. There were the same pine woods, varied occasionally by a ti-ti or cypress swamp. Once we saw in the distance a pretty deer—how supple it was!—a doe. The colored driver said, "If I had my gun I would git dat, sure." Who would want to take the life of such a pretty creature?

I never watched bees during winter in Florida when they were not bringing in pollen. It's a mystery where they gather it. There must be pollen-bearing plants under the thick under-brush of the ti-ti's. I didn't see a

Your illustrator has, in sectional view, shown the ventilator as passing up through the roof in the middle of the floor. This is correct, all



but in that the ventilating-tube, which is a three-inch tin conductor reaching from the bottom of the cellar two feet above the floor

over the bees, does not directly reach the outside.

The value of this modifying room will be better understood by the fact that it is in reality a part of the cellar, and not merely a roof. The cellar is in all respects a cistern. It is 16×16 ft. on the level of the ground, and 12×12 ft. at the bottom. The sills are 2×12 inches, and 18 ft. long, and lie flat in the cement of which the sides and bottom of the cellar are composed. The roof, as you will note, extends below the level of the ground, and discharges its water into board conductors leading to lower ground.

The floor above the cellar is 2 inches thick, composed of dry inch boards. Three inches of dry pine sawdust covers this floor. Every corner and crack through which air could circulate is closed with Portland cement. Three trapdoors are of the same thickness as the floor, and an easy stairway leads to the cellar. The hives are in rows on all sides, three high, directly over each other, leaving an open square in the middle of the room.

The square hives stand on their regular bottom-boards, and have a back and front entrance 11 inches by $\frac{1}{8}$, with no possible upward ventilation or communication. The roof is made of tamarack (larch-tree) boards, one foot wide and battened with the same kind of lumber 6 inches wide, and covered with coal tar.

The cost every one will want to know. It was from \$50 to \$55. It now holds 90 colonies, and would hold 90 more if necessary.

The ventilating-tube reaching to the bottom of the cellar proved to be a failure. While it supplied cold air, and kept the temperature all right, it failed to dilute the carbonic gas, and has been taken out. Only the three-inch hole in the upper floor has been used for the last month, and seems all right. The extreme variation in the cellar has been 4°, being below 50 all the time, but no time as low as 45°.

Feb. 14.—Bees O. K., 47°. Outdoors, about 6°. Death-rate about 2 lbs. of dead per month for the 90 colonies. The last sweeping gave an increase of $\frac{1}{2}$ lb. They are swept out every 12th day of the month, and the dead weighed. They were put in the cellar Nov. 12.

Farwell, Mich.

[As I have said elsewhere in this issue, I believe it is to be one of the cheapest and best repositories ever devised. The scheme of having a gable roof and a good thick frost-proof floor over the cellar, the latter below ground-level, is most excellent. The objection to the cellars of ordinary dwellings is, that about two feet of the cellar is above ground; and in the two feet of wall there is liable to be one or more windows through which cold and light enter. By the Bingham plan, the whole, or practically the whole, of the repository is under ground. The thick frost-proof ceiling or floor overhead, further protected by a gable roof, makes almost an ideal protection.

Incidentally it is interesting to note how little ventilation, if the temperature is right, is required. I hardly need say that Mr. Bingham, the inventor of the smoker, honey-knife, and hive bearing his name, is a man of no ordi-

nary ability. He is a fine mechanic himself, and a practical bee-keeper; and whatever he says is good, *is* good in my estimation.

In an early issue we will describe in detail the hive he invented years ago, and which he has recently perfected by adding some new features.]



MAKING NUCLEI, NATURAL AND ARTIFICIAL INCREASE, ETC.

Two postal cards lie before me, covered with questions put on as thick as possible; and in reading them I imagine that the questioners are right here in my office, and that we are talking face to face. Here is the conversation we are having about making nuclei, natural and artificial increase, using foundation, and clipping the wings of the queens:

"I see by GLEANINGS that you are in the habit of talking with beginners who call on you, telling them about how you would work with bees to secure the best results. I am thinking of dividing my bees the coming summer, and want to prepare for this during the early spring months. When dividing bees, is it best to rear queens for them or let the queenless part of the division rear a queen for themselves?"

"I consider any plan of division, which compels the queenless part to rear their own queen, as faulty."

"Why so?"
"Because, in the first place, *good* queens are reared only in a colony very populous in bees, of *all ages*, with honey and pollen coming in from the fields, enough to supply their wants. Of course, this honey and pollen part can be supplied by the apiarist, if deficient in nature; but the *populous* in bees part can not possibly obtain with a divided colony."

"Is that all the fault there would be?"

"No. Where the queenless part of a division is obliged to rear its own queen, such queen will not usually emerge from her cell before the twelfth day. If she emerges earlier she will be likely to be of even more inferior quality than she would be otherwise. Then it will naturally be ten days before she will commence to lay. Now add to this 21 days, as the time before any of her eggs will produce bees, and we have a period of 43 days without any addition of bees to that divided part, except what came from the eggs of the mother queen before the division. By this time the colony becomes very weak in bees, from the constant loss which is occurring, so that such a division is not likely to do more than become ready for winter, if it does even that much."

"What would be the gain by the other plan?"

"If a young laying queen were given at the time of the division, as always should be done, there need be no more than from one to three

days' break in the eggs, in this part of the division, which break would be insufficient to cause any serious loss in bees. And if a ripe queen-cell is given, a gain is made of 11 to 12 days, which would often be equivalent to some surplus honey, and always insure the colony being in much better shape for winter."

"How would you make the nuclei for raising the surplus queens you wish?"

"After trying every thing proposed in the way of making nuclei, I know of nothing better than the following for the apiarist who wishes only queens for use in his apiary. It is seldom that any bee-keeper does not have a few weak colonies in the apiary in the spring. Allow these weak colonies to build up only as fast as they naturally will, instead of giving them brood from stronger colonies, as most do, to the great detriment of the stronger and of little advantage to the weaker. Then, about 15 to 20 days before it is expected to want queens for the division, go to these weaker colonies, remove the frame of brood (bees and all) having the queen on it, setting the same into an empty hive where you wish a nucleus to stand. Now take all of the other frames, not having brood in them, from the same hive, and place them, with all of the adhering bees, in the same hive having the frame of bees, brood, and queen. In this way enough bees stay with their queen to hold the frame of brood in good shape, and if you have one nucleus ready to take a queen from in a few days, should you wish one before you have young laying queens. Two days later, take an empty hive and go to the one having the remnant of the brood from which the queen was taken, setting this hive of brood enough to one side so that the new hive can partly occupy the old stand. Now take half of the brood and bees and place in the new hive, giving each a frame of honey if necessary, when you have two more nuclei ready for ripe queen-cells, these latter having been looked after long enough before so they will be ready for use at this time. By thus placing the hives, the returning bees will divide between the two so that each will be about equal. If one should draw more than the other in bees, move it a little further off from the old stand till you have them about equal. In this way three *good* nuclei are made, with very little trouble, from each weak colony in the spring."

"That seems plain. Now tell us how to make artificial increase so we can secure good strong colonies and a good yield of surplus honey."

"As you put the question, a very moderate increase will be what you wish; and this is the plan I have used under such circumstances for the past 25 years: About eight to ten days before your expected honey-flow, go to a populous colony, which for convenience we will call No. 1, and shake all of the bees and queen from their combs into a hive filled with empty comb or frames filled with foundation, placed where the old one stood, placing the surplus arrangement from the old hive on the colony thus made. In this way you have a strong colony containing all the bees and queen from

one of your very strongest colonies, a hive full of comb or foundation, and the partly filled sections from No. 1, all being in readiness to take advantage of the harvest as soon as it comes. Now take the combs of brood taken from No. 1 to No. 2, and set them on No. 2's stand, having previously moved No. 2 to a new stand a rod or two away. Just before setting the combs on the stand of No. 2, go to one of your nuclei and get the comb the queen is on and take it, bees and all; and as soon as the combs are on the stand of No. 2, shake the bees and queen from it in front of the hive on No. 2 stand, and let them run in with the bees from No. 2, now hovering about trying to find their old home. Put sections on this hive, and the work is done. Thus you have a colony composed of a full hive of combs and brood, a good young queen, and workers to protect her, and all the field or working force from No. 2, which make a big strong colony ready for business as soon as the honey-harvest arrives. No. 2 has a hive of combs and brood, their old queen and sections partly filled, but they have lost their working force. In from eight to ten days they are quite well stocked with workers again, when they are also in fine shape for the harvest which is now on. I have told you this plan at length as you wished it made plain, and because I consider it the best plan of artificial increase in existence. If you wish a greater increase, go through the same operation again just after the harvest, less the sections, and see that No. 1 is fed in some way, or supplied with combs of honey."

"Which is better for a beginner — this or natural swarming?"

"The beginner might try each, the artificial on a small scale till he becomes accustomed to it. Natural swarming has a fascination about it that no mode of artificial increase can possibly have. If one can be about home, natural swarming is a good way of increase where persons desire to double their colonies, and have the ability to prevent all afterswarms."

"In natural swarming would you clip the queens' wings?"

"Yes, by all means, as this not only prevents swarms from absconding to the woods, but makes you master of the situation where two or more come out or cluster together, and saves all climbing of trees, cutting off limbs, etc., they hiving themselves by returning, you having taken away the old colony while the swarm is out, substituting a new hive in the place of the old one."

"How about losing these clipped queens in the grass?"

"In all well-regulated apiaries the grass is kept cut short during swarming time, if not at all times; and if each stand has an alighting-board running from the entrance of the hive to the ground, as always should be the case, very few queens will fail to go back to the hive when the swarm issues. If any should happen not to return, a few bees will always cluster about them, so the queen can be found by this cluster of bees by glanc-

ing over the ground in the apiary, on the apist's return."

"Which is more profitable when using natural swarming—having the frames and sections filled with foundation, or just starters?"

"As to the sections, I now say fill them *always*. More salable section honey results therefrom. As to the frames, consult your time and your pocketbook. If time is precious, so you can not look after the combs when being built from starters, and your pocketbook can afford the foundation, then buy it. If the contrary, then you can well make it pay to have the bees build their combs in the brood-frames as long as they will build worker comb. When they take to building mostly drone comb, a few frames filled with foundation, to use at such a time, will well pay, even if you have to pay \$1.00 a pound for the same."

"One more question, a little off the order of the rest, and we'll be going. How can you tell when a colony is about to supersede its queen?"

"This is generally told by a decrease of brood in the hive, or the brood being scattered about in different parts of several combs, instead of being compact together; and, together with these conditions, the starting of queen-cells while the old queen is present in the hive. If in the swarming season, the scattered and scanty brood is what we go by. If out of the swarming season, then the starting of queen-cells, the same having eggs, larvae, or pupae in them, tells us on first sight that the old queen is about to be replaced with a young one. But it is often the case that, after all of these things looking toward the supersedure of a queen, the bees will change their minds (?) and destroy all the cells started. If they do this they will often go to feeding the queen in an extra manner, when she will put in a lot of brood as compact as, and nearly to the amount of, that done by a young queen. And I have known such about-to-be-superseded queens taken away after the young queen was hatched, and roaming over the combs with their mother, to keep up a good rousing colony for two years, when introduced to the same, this showing that the bees themselves do not always know just what is best."

every instance the float would work to one side or the other, and stick there; and then, after a little, with the weight of bees on it, it would fall and drown about 50 bees, more or less, so I stopped using the float, and had no more trouble with dead bees in the feeder. All things considered, the division-board feeder is a long way ahead of any other feeder for me.

H. W. WHEELER.

Mt. Pleasant, Feb. 10.

[While I never tried floats in the Doolittle feeders, I have tried them in other feeders of similar construction; and from what experience I have had I felt very sure that they would be worse than useless in division-board feeders, and have so advised our readers. Mr. Wheeler's experience above is exactly what I should expect.

Since I told how to make a division-board feeder, there have come in dozens of letters praising this particular article. We did not try it to any great extent until last season, but found it so immeasurably superior to anything else that we shall use it in the future almost exclusively. For spring feeding there is nothing that will compare with it; and now is a good time for bee-keepers to make them. For particulars regarding their construction, see GLEANINGS for Dec. 1, page 895.—ED.]

TEMPERATURE OF A BEE-CELLAR.

I have a few colonies of bees in my cellar, and the temperature is down to about 15 above zero. I have chaff cushions on my hives. Last year I did the same, and they wintered well. Now, would that be too cold? I have made a tin covering to go outside of a big Rochester lamp, so as to make it dark in the cellar, and it works satisfactorily. I can raise the temperature with it. Now, will the burning of that lamp in there affect the air in any way so as to destroy my bees?

Luther, Mich.

A. E. HOVEY.

[A temperature of 15 degrees above zero in the cellar is altogether too low; and if this continues for any great length of time you will probably find that many of your bees will be dead before next spring. A large lamp in the cellar to raise the temperature may be used, but it is better to put the top of the chimney of the lamp at a point where the burned gases of the lamp can be conveyed up the stove chimney. A lamp has been and often is used to warm up a cellar, without any provision for carrying off the gases; but if there are many colonies in the cellar it is liable to be attended with bad results. In any case, be sure the lamp is turned high, or high enough so it will not throw off that disagreeable smell so often noticed when a lamp is turned down. Instead of using artificial heat I would abandon your present cellar or bank it up so that it will resist extreme temperatures outdoors, with very little variation inside. The cellar elsewhere described in this issue by T. F. Bingham will, I think, remedy your trouble with low temperatures — ED.]



THE DOOLITTLE DIVISION-BOARD FEEDER, AND WHY NO FLOAT SHOULD BE USED.

Tell your readers to keep the float out of the Doolittle feeder. Ten years ago when I first made them I thought some of the bees would get drowned, so I made some floats for my feeders, which were even full size, Gallup frame, 2 in. inside measure, with sides coming up to $\frac{3}{4}$ in. from top-bar. After filling up the feeders I laid on the floats, took out two frames of empty comb, and hung the feeders in their place. Now for the result. In almost



W. L. COGGSHALL, of West Groton, N. Y., whose biography appeared in our Feb. 1 issue, has recently bought more bees, so that now he has 16 different apiaries, embracing something like 1400 colonies; and yet he admits that his health is not quite as good as it used to be. How perverse some business men are! When they are overworked, then they go forthwith and add to their burdens by increasing the amount of their regular labors. Say, Lamar, you will have to be content hereafter to use your brain for other people, and let them furnish the muscle.

THE NATIONAL BEE-KEEPERS' UNION MERGED INTO THE NATIONAL BEE-KEEPERS' ASSOCIATION; AN EXPLANATION.

The accompanying letter from Thomas G. Newman, General Manager of the old National Bee-keepers' Union, which has now been merged into the National Bee-keepers' Association, has this to say:

The National Bee-keepers' Union, having almost unanimously adopted the new constitution, as well as the U. S. Bee-keepers' Association, that constitution takes effect at once.

Article 4, Section 3, says that the President, Vice-president, and Secretary must be elected at the annual meeting. As that does not occur until next fall, a vacancy exists in these offices. Article 7 says that "any vacancy in the Executive Committee, which is composed of these three officers, may be filled by the Board of Directors." It will be in order now for the Board of Directors, by mail or otherwise, to elect the President, Vice-president, and Secretary, to fill the vacancies, which were elected by the U. S. Association at Philadelphia, of which I believe, you were President, with, of course, G. M. Doolittle, Vice-president; Dr. Mason, Secretary, or any person else that they may agree upon.

You will readily see that the constitution, not going into effect until after its adoption, could not recognize the officers elected by either organization, prior to amalgamation. It was my intention to have inserted on the ballot the same officers that were elected at Philadelphia; but, not being able to see, I had my clerk look at the *Bee Journal*, where a list of the officers of the U. S. Bee-keepers' Association was given each week, and copy them into the ballot, not remembering that the new ones did not take office until the first of January, so we got the officers of the previous year on the ballot by an oversight on account of my lack of vision.

This, however, makes not the slightest difference, and was intended only as a compliment, for we were voting on the officers called for by the old constitution of the National Union, which was President and five vice-presidents (not one only), etc.

My physical health is improving slightly, but my vision does not appear to have improved at all, I am sorry to say. I had hoped that the improvement in health would restore the sight; but I must wait, using all the remedies within my power, and hope for the best.

THOMAS G. NEWMAN.
San Francisco, Cal., Feb. 14.

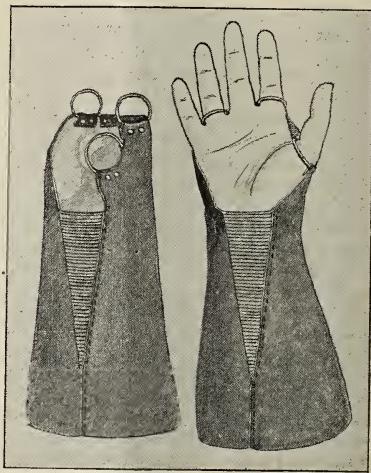
A NEW BEE-GLOVE.

THE illustration herewith shows a bee-glove devised by C. I. Graham, of Los Banos, Cal.

There are quite a number of practical apiculturists, among whom may be named the Coggshall brothers, who wear heavy gloves with the ends of the fingers cut off. It is well known that bees at a sudden onslaught are more liable to attack the back of the hand or wrist than any other portion of that member.

Cutting off the finger-tips gives one the advantage of protection from stings as well as the convenience of the natural touch of the fingers.

Mr. Graham has gone one step further, and devised a glove something on the principle of the Congress gaiter. The wrist portion of the article is made of some stout strong cloth and an elastic material the same as shown in shoes. Instead of shortened glove-fingers every other finger passes through small iron rings; and these are said to be sufficient to keep the protector tightly over the back of the hand. The elastic rubber causes the wrist portion to fit tightly, preventing any bees from getting up the sleeve, and the rings give the freest possible use for the fingers and palms of the hands.



I have not tried these protectors any more than to put them on. I don't know, but I think I would not on a hot day like to have a pair of tight corsets, so to speak, around my wrists. I have used with a great deal of satisfaction a pair of loose straw cuffs to prevent soiling of my sleeves, and to keep bees from crawling up my arms.

THE SPRAYING LAW IN NEW YORK IN DANGER.

MR. W. F. MARKS, of Chapinville, N. Y., president of the New York State Association of Bee-keepers' Societies, writes that a bill has been introduced in the legislature, amending the spraying law so that experiments may be made at experiment stations, and by individuals. While this is innocent enough on its face, yet the measure was framed by the opposers of the spraying law, who, having been unsuccessful in having this same law repealed at the last session of the legislature, are now taking this apparently innocent but nevertheless effective method of taking the very teeth out of the law. Mr. Marks says that the experiment stations or the experimenters have none of them asked for such an amendment; and he desires all the bee-keepers of New York to write to their senators and representatives

at once to protest vigorously against the passage of the amendment under consideration.

Let me urge on the bee-keepers of New York not to put this off, nor assume that somebody else will do it for you. Sit down at once and write your senator and representative, and then you will have done your duty.

When I was in Colorado I understood that a similar attempt was made to practically kill the spraying law in Colorado; and it behooves the bee-keepers of the different States having such laws to be on the watch, because there is a lot of ignorant fruit-men who are up to just such tactics as this.

DEAD BEES ON A CELLAR BOTTOM; HOW MANY CONSTITUTE GOOD OR BAD WINTERING.

REFERRING to the statement that "75 or 100 colonies in a cellar 10×10 may furnish dead bees before spring sufficient to cover the floor an inch or two in depth" (GLEANINGS, 804), Mr. Taylor, in the *Review*, says, "A little calculation will show that one inch in depth on the space specified would amount to somewhere in the neighborhood of 209 quarts, and two inches to about 418 quarts; so that Mr. Root's statement is equivalent to saying that colonies of bees in a cellar may lose anywhere from 2½ to 5 quarts of superannuated bees from a colony during the winter."

In my own cellar the dead bees seldom come anywhere near covering the floor from sight, and about a pint to the colony would be a fair average loss."

In trying to verify these figures, one meets with some difficulty. It would appear that the whole cellar bottom (100 square feet) is considered covered to a uniform depth with bees. The statement in GLEANINGS was certainly not so meant, and should hardly be so considered. It is hardly likely the inquirer was misled by the reply in GLEANINGS.

Admitting, however, that the dead bees might be evenly distributed clear out to the cellar walls, let us see how the case can be figured. Suppose that in some way the hives are supported by shelves suspended from above, so that the bees may be distributed evenly over the entire floor to a depth of two inches, that would make 428 quarts (instead of 418); and as one would naturally suppose that this greater depth would be the result of the greater number of colonies mentioned, 100, that would make about 4¼ quarts per colony. That is certainly bad enough, without calling it 5 quarts, as Mr. Taylor does.

While it is possible that the hives may be thus swung from above, leaving the entire floor to be covered with bees, it is much more likely that the hives should rest on stands as large as or larger than the bottoms of the hives. With 75 or 100 colonies in a room 10×10, one would be likely to put them on about 25 stands, piling three high for the 75, and four for the 100. Each stand will occupy probably 360 square inches or more, which space will be clear of bees. Deducting the space occupied by 25 stands leaves 5400 square inches as the floor space for the dead bees; and supposing this is

occupied clear out to the walls, an inch depth will make 80 quarts, or 1½ quarts per colony if 75 colonies are present. If the depth on the floor is two inches, there will be 160 quarts, or 1¾ quarts for each of 100 colonies. Mr. Taylor says he loses only a pint to a colony; but the figures here given, even though larger than should be fairly understood from the statement in GLEANINGS, are very likely to come nearer the mark in the average bee-cellars than a pint to a colony.

Dead bees on the cellar bottom will cover it to a greater depth than the same number of live bees. They sprawl out more, and an actual count shows 2664 as the number of dead bees in a quart, when gathered from a cellar bottom. That would give 4262 bees in 1½ quarts, which would be raised in a Langstroth frame a little more than half filled with brood. No doubt many would be gratified to have the winter loss no greater.

The matter is hardly worth occupying so much space, but it shows how wide of the mark one can be when he becomes a professional fault-finder.

A QUIBBLE ON A NAME.

On page 858 of GLEANINGS for last year, in referring to the peculiar bee-disease that was raging in certain portions of New York I went on to give the reasons why I believed it to be entirely distinct from foul brood; and among them I incidentally mentioned a very unimportant consideration, namely, that there was a divergence of opinion as to the cure of foul brood, and that possibly for this reason there might be two kinds of foul brood. This proposition Mr. Taylor very vigorously combats by saying, "Scientifically speaking there can not very well be two kinds of foul-brood disease." Exactly. But, Mr. Taylor, please hold yourself to the text, and note that I was not "scientifically speaking." If you will refer back to the article in question you will see that I referred to this new bee-disease as "foul brood so called;" as "foul brood, or what he supposed to be that disease;" and then when speaking of the other foul brood I referred to it as "real foul brood," as "*Bacillus alvei*." Not even a beginner, much less an expert, should be confused when such distinctions are thus drawn, and, besides, it is a matter of little importance whether the new bee-disease in New York before it was named was called "foul brood so called," or something else. As it is, Mr. Taylor has perverted the intent of the article and confused the issue. No doubt this was unintentional.

WINTER LOSSES UP TO DATE; IDEAL WINTER REPOSITORIES.

So far, judging from general correspondence coming in, bees are wintering well, while a year ago at this time we had heard of a great many severe losses. The winter thus far has been rather favorable. While there have been cold snaps, they have not, in the majority of locations, been long continued. In Ohio we have had no real cold spell longer than a week at a time, followed by a week, or even two weeks, of warm or "sloppy" weather. As I

have said before, bees outdoors, at least, can stand severe cold for a week very comfortably; but when it lasts two or three weeks, or a month, the effect is apt to be (not always) disastrous. After weeks of zero weather or ten or fifteen degrees warmer, with high winds, I have seen how the bees have eaten away all their stores within an inch or so of the cluster, but which, on account of the low temperature, was not able to move to the stores, and consequently starved. When these warm days come on, the cluster is broken up and re-formed right over or near the stores, and then it is ready for another cold streak.

Of course, bees in good warm frost-proof cellars where the temperature goes neither very high nor very low, the weather outside has very little to do with their wintering. If I were to have a bee-cellar at all I should want one of just this sort; and it strikes me that the Bingham repository illustrated elsewhere in this issue is the best that has yet been devised; first, because it is the cheapest; and, second, because it gives the very best results obtainable. If there were a living-room above the frost proof floor Bingham could hardly secure as good results. That being the case, house cellars are not ideal repositories.

SOLAR WAX-EXTRACTORS IN COLORADO; HOW R. C. AIKIN MAKES AND USES THEM.

AFTER the Colorado convention Mr. Rauchfuss and myself spent Thanksgiving with Mr. Aikin, president of the Colorado State Bee-keepers' Association, a prominent and influential bee-keeper, and a prolific writer on bee lore. On this occasion we inspected with pleasure a number of his methods and devices.

There are a great many things that I desire to say in connection with Mr. Aikin and his methods; but at this time I wish to speak of his mammoth solar wax-extractor, constructed along somewhat different lines from those usually made. With my ever faithful kodak I managed to get Mr. Frank Rauchfuss (secretary of the organization just named), with a great deal of persuasion, amounting almost to a command, to stand near the extractor, or what looks like a greenhouse. He finally obeyed, and then I snapped the kodak as he stood there. After a little Mr. Aikin came out, and showed us how he operated it.

"Now," said I, "Mr. Aikin, I am sorry I did not get you in the picture. Please take your position and I will take another snap shot." He demurred, but finally acquiesced, and the view was taken. Both pictures are shown on page 172, and testify to the general excellence and sharpness of detail that one can secure with a No. 4 folding kodak—an instrument that I believe permits of a larger range of subjects and greater variety of uses, than any other camera made.

Now, then, for the solar wax-extractor. As will be seen, it looks very much like a small greenhouse. In fact, it is built a good deal on the same plan. The floor or pan of the extractor, so to speak, is built right over a brick oven, so that not only solar but artificial heat may be utilized.

"Why," said I, "Mr. Aikin, what is the sense of having artificial heat when you have so many days of bright strong sunshine, with an atmosphere so clear that there is neither mist nor rain greater portion of the year?"

"Well," said Mr. Aikin, "try it for yourself. You will discover that you can not only do better work, but secure much more wax out of the dirt and refuse by such an arrangement than you can by either source of heat independently. The heat from the sun acts only on the top of the mass. The melted wax runs down and lodges in the refuse, collects, and stays there. By my plan I apply a gentle heat *beneath* by means of the brick flue, or oven as you see. The heat from *above* and the heat from *below* cause almost every particle of the wax to flow out of the refuse, and run into the pans in front."

Then he took me inside and showed me his brick flue, or oven, by which he supplied artificial heat from beneath.

"Well, now," I said, "if such a combination arrangement is a good thing for Colorado, with its beautiful perpetual sunshine, it must be much more effective in Ohio, where we have days and days of cloudy sky, of mist, of rain, and of dew."

"Exactly," said Mr. Aikin; "and, as you see, this cheaply constructed affair is built on the ordinary plan of a small greenhouse, using large and small sizes of glass, such as one can get cheaply. I built the whole thing myself, even including the building in the rear."

"You seem to be a sort of jack at all trades," said I.

"Well, a bee-keeper has to be, or at least *I* have to be," said Mr. Aikin, with a smile. "There are days when I can not do anything else, and I might as well do it myself as to employ an expensive carpenter or a mason; and then," he added with a twinkle, "I get a lot of fun out of it in the bargain."

The building in the rear is a sort of workshop located on one end of the apiary. In fact, a few empty hives can be seen in the foreground just in front of Mr. Rauchfuss, in the lower picture.

I omitted to explain that the wax is diverted to one side as it runs down the inclined pan, as seen in the picture in the opening, then flows from one pan to another *a la* Rauchfuss, as was explained on page 769 of last year.

I am getting a collection of pictures of people just as they appear "every day around home." Our readers have already seen a specimen that I took of my father; and it is pronounced by every one natural, because he is not "fixed up for company." Mr. Aikin, in the picture above, hardly suspected my designs until I had captured him as the picture shows in the top view. As to Mr. Rauchfuss, I have had trouble with him a number of times because he would not obey orders—that is, get in front of the camera when I wanted him to; but I caught him a number of times, and now I am going to have my revenge by showing him up to the world in his true light. I shall have more to say of him and Aikin again at another time; indeed, I have been *Aikin* to do so.



Righteousness exalteth a nation, but sin is a reproach to any people.—PROV. 14:34.

My talk this time will be rather "Our Nation" instead of "Our Homes." I am not a politician, and I am not very much versed in matters of government; and it might seem to many that I am very presumptuous in undertaking to even discuss matters that center about the very head of the government of the United States; and as I take up my task this morning I realize perhaps more than I ever did before the need of grace and wisdom and understanding from the great Father above. Yes, I need the influences of the Holy Spirit to guide and direct this weak and humble voice of mine as I attempt to talk to the fathers and mothers of our land.

Our readers are well aware that I am a member of the Ohio Anti-saloon League; in fact, I was present at the very first meeting that was called for organizing such a league. As a consequence, I have been deeply interested in all temperance measures, not only for Ohio, but for the whole United States. During our late war, when we were told intoxicating liquors were absolutely forbidden in the navy, with all our other temperance people I thanked God for such a wise and righteous law; and when the brewers of our land, with the army canteen, began furnishing our soldiers beer by the carload, I, with others, sent up a vehement protest. All temperance people united, and a great battle was fought. But the enemy, with their millions, contested the matter inch by inch. It was only by hard earnest work and fervent prayer that we prevailed, and passed a law forbidding the sale of beer and other intoxicants in the army as it is in the navy. We knew at the time that the enemy was without conscience and without scruple. We knew they would murder law or human beings or any thing else rather than be stopped in this money-making business of selling beer to the army. But we did *not* know, however, that they would dare to go to such lengths (especially at the very head of our government), as to declare boldly and unblushingly that black is white and white is black.

On page 369 of this journal for May 1, last year, I spoke of the matter. I alluded to the fact that Attorney-General Griggs declared that, in his opinion, the temperance law, which we had secured in spite of the combined powers of evil, did *not* mean that the canteen traffic should stop, but that it should *keep on*. Temperance people stood aghast. This piece of work seemed to be an outrage on good sense and on all law and justice, and we thought it *could not* be true. Such brazen audacity was never heard of anywhere, let alone by the Attorney-General of the United States. On page 553 of this journal for July 15, last year, I alluded to it again. Griggs' decision made such an uproar that something *had* to be done. A delegation of the best temperance

people of our land called on the President. They were intending, also, to call upon Griggs himself, if I am correctly informed; but the President begged them to leave the matter with him. He told them the Attorney-General had no doubt made a mistake that he would be ready to rectify, adding that he was an able lawyer, and a man honest and courageous. The President promised this temperance delegation that, if they would leave the matter in his hands, he would look into the matter personally, and whatever was not right should be made so.

The Christian people and the temperance people of our land then waited, of course, a reasonable length of time for the President to report. I need not tell you the story of the letters, telegrams, etc., that were sent to the President during the past six or seven months. I wrote a letter myself that was promptly acknowledged by the proper clerk, stating that the letter would be presented to Mr. McKinley himself in due time. Very likely there has been such a quantity of letters of similar import the President could not read them all nor even listen to them all. These appeals came not only from temperance organizations, but from Christian people, from the ministers of the United States, and the temperance and religious papers. But no reply was made whatever—at least I can not learn of any reply of any sort having been made. Our President did not even keep his promise to the temperance delegation—that is, if he did look into the matter personally he made no reply whatever. I have read the dailies as I never read them before. I have carefully scanned every thing in regard to our President (his whereabouts and doings), to see if mention or notice was given of the matter.

Perhaps I might mention here that, a month or two ago, the Presbyterian people of the United States united in a body, and appealed to the President to have the tremendous importation of beer and American liquors to the Philippine Islands stopped. The papers published by the beer interests declare the statement is exaggerated in regard to the number of American saloons in Manila. But our soldiers who come home have been giving us the facts continually. They declare, one after another, that there has been no exaggeration. The American idea of carrying civilization to the new possessions belonging to the United States seems to be in flooding them with beer; and a Milwaukee brewery boasts of the hundreds of carloads they are shipping. The United States was to establish schools and colleges among the Filipinos. Now, I do not know how many schools and colleges have been established; but the brewers of America have been teaching the ignorant natives (as our people have been calling them) to drink beer, and to buy it, faster than all the missionaries and teachers combined together could educate and inculcate righteousness, purity, and temperance.

Well, a few days ago it appears that, when everybody else failed to get the President to even notice our Christian temperance people, a delegation from the W. C. T. U. succeeded

in obtaining an audience. We are told the President courteously listened while the whole matter was placed before him and explained in detail. These ladies then showed him letters from more than 200 prominent ministers and educators, protesting against the Griggs interpretation. What did he say? Just nothing, more than that the said decision would have to stand. Let me digress a little right here.*

Although the President himself has not said any thing in extenuation of this awful outrage, some excuses have been trumped up for such a decision. One came out in the daily last fall. It said the question had been asked to 600 army officers as to whether the army canteen was deleterious or otherwise to the morals of the soldiers. I have not the document at hand, but it was claimed the result was something like this: Only two or three officers—perhaps half a dozen in the whole 600—voted against the canteen † Now, first, let us suppose this to be true. Does even that justify breaking law and *defying* it?‡ I suppose every friend of temperance knew the statement was untrue at first glance. No doubt the brewers and their agents did get the names of 600 officers in the army who were in favor of open saloons among the soldiers. Perhaps they worked so sharply and carefully that they ran on to only half a dozen (by mistake, doubtless) who voted against the canteen. The National Anti-saloon League now has its headquarters at Washington, and an office there, so I am in a position to know what I am talking about. Furthermore, a relative of mine has been in the employ of the government in a position that takes him among soldier camps, and he has given me a true statement of affairs.

The laws of the United States are pretty well enforced in almost every thing that does not touch the liquor-traffic. The only reason why the offenders in this line escape is because of the immense amount of money they han-

dle, and because of the tremendous sums that the traffic yields, *day and night, week days and Sundays*. The liquor-dealers and brewers occupy high positions. We know all about this. It makes trouble to wage war or even to try to enforce the laws. These whisky-loving millionaires have got into politics as a matter of course. They have intrenched themselves and fortified themselves through all the avenues of the nation. They have their agents and "missionaries" (?) in all lines of business. They are getting into our schools just as fast and as far as 'hey can, and they are doing the same with our Christian churches. Some of our religious periodicals are defending them. Members of churches are persuaded to fight the Anti-saloon League, and then their statements are heralded far and wide. Why, if there was not a righteous and just God above, and if we had not his promises in his holy word, we might as well give up and let the liquor-traffic own every thing and manage every thing. God forbid! There is a righteous and just God who rules the universe in spite of Satan and all he can bring to bear. Let me digress again a little.

We take and read the intemperate periodicals as well as the temperance and religious papers. Now, the whisky politicians of Ohio do not, of themselves, claim they can muster up more than 30,000 or possibly 40,000 to vote on their side. They have really been snowing us under with this limited number, when we have here in Ohio not less than 200,000 voters who are members of churches. The reason why this small number prevails over the larger is because Christian people are indifferent to matters of state. They are hard-working, busy, peace-loving, and law-abiding people, and sometimes do not even take the trouble to go to the polls and vote *at all*. God is punishing us for our half-heartedness and for our sins of omission.

Now, there is just one religious periodical that makes a sort of defense of our President, and I wish to make some extracts right here from the *Independent* for Feb. 8. The *Independent* first takes up this matter (of criticising the President) because, as he is a member of the M. E. Church, he can not have the privilege of acting according to the dictates of his own conscience in the matter of drinking intoxicating liquors at public banquets. We will not quarrel with them—at least just now—on this ground. Read the following extract:

But a more serious charge is made against him by the same persons, who attack him for not banishing liquor, under the canteen law, from the military canteens. The question was a legal one, whether the law forbade the sale of intoxicating liquors, and, as he was obliged to do, the President referred it to his Constitutional legal adviser. Attorney-General Griggs told him the law forbade the employment of soldiers to sell beer, etc., but not of civilians. He was obliged to follow that opinion, or get it reversed by other special advice. Secretary Root is a fine lawyer, and he told the President the same thing. The lawyers of the Cabinet agreed with Mr. Griggs. That had to end the matter so far as the law was concerned. We do not wonder that the interpretation seemed strange and forced, for it was supposed that it was drawn up to suppress all sale of alcoholic beverages on military premises. But we suspect that there was some chicanery in the wording of the bill. It forbids, first, that any soldier or enlisted man shall sell intoxicat-

* By the way, what sort of example is the Attorney-General of our nation setting before the younger attorneys and the lesser attorneys of our land? With all the other improvements and advancements, has not the legal profession advanced also? or are we to understand that the summit of legal attainments at the present time is to find out how we can best evade law or avoid it? or, if you choose, ignore law and trample it under foot? What sort of precedent is this, standing out so prominently at the very heart and head of our government? And if the thing is not bad enough as it is, must we have a President who stands by such an Attorney-General, and says such law, or evasion of law, rather, *has got to stand?* Not only at every State capital, but at every county-seat, we may expect to see this thing duplicated. In fact, it is being duplicated, right along. May God help us!

† By the way, what a tremendous tribute(!) this is to the morals and temperance principles of the officers in our United States army—that is, if the statements are true!

‡ Our good friend W. P. Root suggests, while I am dictating this, that if some great lawyer had said, when Lincoln issued his proclamation freeing the slaves, that, instead of abolishing slavery, it was designed to keep them in bondage for all time to come, it would be on a par with the Griggs decision. Thank God there was not any lawyer at that time to make such an iniquitous decision; and even if there had been he would have had a rough-and-tumble fight with the stalwart rail-splitter of Illinois before he ruled the nation even for six or seven months as Griggs has done.

ing liquors in these canteens. Would it not have been much simpler to have directed that no liquors shall be sold by anybody, if that was what was intended?

To make it plain to everybody we give a copy of the law right here:

No officer or private soldier shall be detailed to sell intoxicating drinks as a bartender or otherwise, in any post exchange or canteen, nor shall any other person be required or allowed to sell such liquor in any encampment or fort, or on any premises used for military purposes by the United States; and the Secretary of War is hereby directed to issue such general order, as may be necessary to carry the provisions of this section into full force and effect.

Now, inasmuch as the voice of the people brought polygamist Roberts to a realizing sense of his iniquity, can not the voice of the people in like manner give Attorney-General Griggs to understand that there is a time when forbearance ceases to be a virtue?

The *Independent* goes on to say:

Then the law goes on to require that no intoxicating liquors shall be sold on any military reservation, post, "or other military premises." "Other" than what? The lawyers say other than what had been previously provided for, other than the canteens in which soldiers must not be barkeepers—but in which, by implication, civilians may. That was not the intention of the temperance men who urged the law, but we suspect it was the idea of the men who drew it up, and it can legally be read into the words. The execution of the law is in the hands of the military officers of posts and regiments, and they generally want beer, etc., sold. We believe with General Howard, General Shafter, and many other officers that it is better to have no liquors on sale in any government grounds or premises; and we suggest that the proper thing to do is not to abuse the President for being guided by the lawyers of his Cabinet, but to put a new and clear law through Congress, and we warrant the President will sign it.

The law was drawn up by Mr. Wilbur F. Crafts, of Washington, D. C. I have heard Mr. Crafts speak at our Anti-saloon League meetings. He is a man of scholarly attainments, a clear thinker, and one of the brightest and clearest speakers I ever listened to. My impression is that the reason why he framed the law just as he did was that there should be no loophole to creep out of or evade, for he knew from past experience what the liquor-men would probably try to do. In using the phrase "or any other military premises" he is simply talking in legal phrase. In almost all of our laws we have this repetition that seems to an outsider useless and uncalled for. But we are told the repetition is to make the matter exceedingly plain, and so there can be no evasion. The explanation given by the *Independent* in regard to that word "other," it seems to me, is about the thinnest and flimsiest logic that I ever heard anywhere on the face of the earth. The supposition that Griggs knew nothing of the conflict that has been going on between temperance and intemperance, and that he did not really know what the temperance people had been working for, can not be tolerated. The President assured the temperance delegation that Griggs was an able lawyer, and a courageous man; but the statement that he was an "*honest man*"—what do our readers think of it?

This whole matter is ridiculous—it is a burning shame. It is an awful outrage and travesty on our good men and our good women. There are hundreds if not thousands with just as much ability, education, with just as much generalship, who have at least some fear of

God in their hearts, and some sense of righteousness and justice. The educated, intelligent, Christian, temperate and temperance people of the United States outnumber the whisky element more than two to one. We can beat them in any contest that is at least half fair. Of course, we can not stoop to such tricks as the one I have outlined in my talk to day; but God is with us, and we are more than a match for the whole of them, even if Satan with all his angels masses his entire forces in with them just to keep up the beer and whisky traffic. By the way it rejoices my heart to see that Gen. Howard and Gen. Shafter do not recommend the army canteen. May God be praised that we have at least two great and good men who can not be humbugged or bulldozed or influenced in any manner by the rum power and the whisky interests.

If anybody thinks the army canteen is not quite so bad after all, let him read what Rambler says about Uncle Sam's army canteen away up on the Pacific coast in Oregon, page 358, 1899.

A KIND WORD FROM THE PRESIDENT OF THE OHIO WOMEN'S CHRISTIAN TEMPERANCE UNION.

Friend Root:—I have read with a great deal of interest and profit the department of "Our Homes." It is certainly encouraging to read such articles from the pens of Christian business men, whose word and experience go so much further with the mass of humanity than that of the professional reformer. Thanking you again for your kindness, I am

Sincerely yours, ANNIE W. CLARK,
[*Pres't O. W. C. T. U.*]

Columbus; O., Feb. 16.

What Dr. Miller says in a Straw, Dec. 15th No., about A. I. Root's showing up frauds doubtless mildly expresses a sentiment of many if not all of your readers. At our house friend Root's Home talks are always a most interesting part of GLEANINGS. While reading this latest one it is almost sad to observe what a struggle it costs Mr. Root to retain his good opinion of mankind; but are there not other reasons that prohibition laws do not always prohibit, besides the carelessness of the people in general and the wickedness and large means of the liquor-men in particular? A. GREVE.
Davenport, Iowa, Dec. 29.



SOME SUGGESTIONS FOR A NEW STYLE OF GREENHOUSE FOR COLD CLIMATES.

Mr. Root:—I have read your description of how to build a greenhouse, with a good deal of interest; and I do not suppose you would object at all to a little friendly criticism of it, as no doubt a good many will be built after your plan; and, to my way of thinking, will not put their money to the best advantage. As with bees, location may have a good deal to do with it—in this case, caused by climate and sun elevation, so I speak only for my section or a like one.

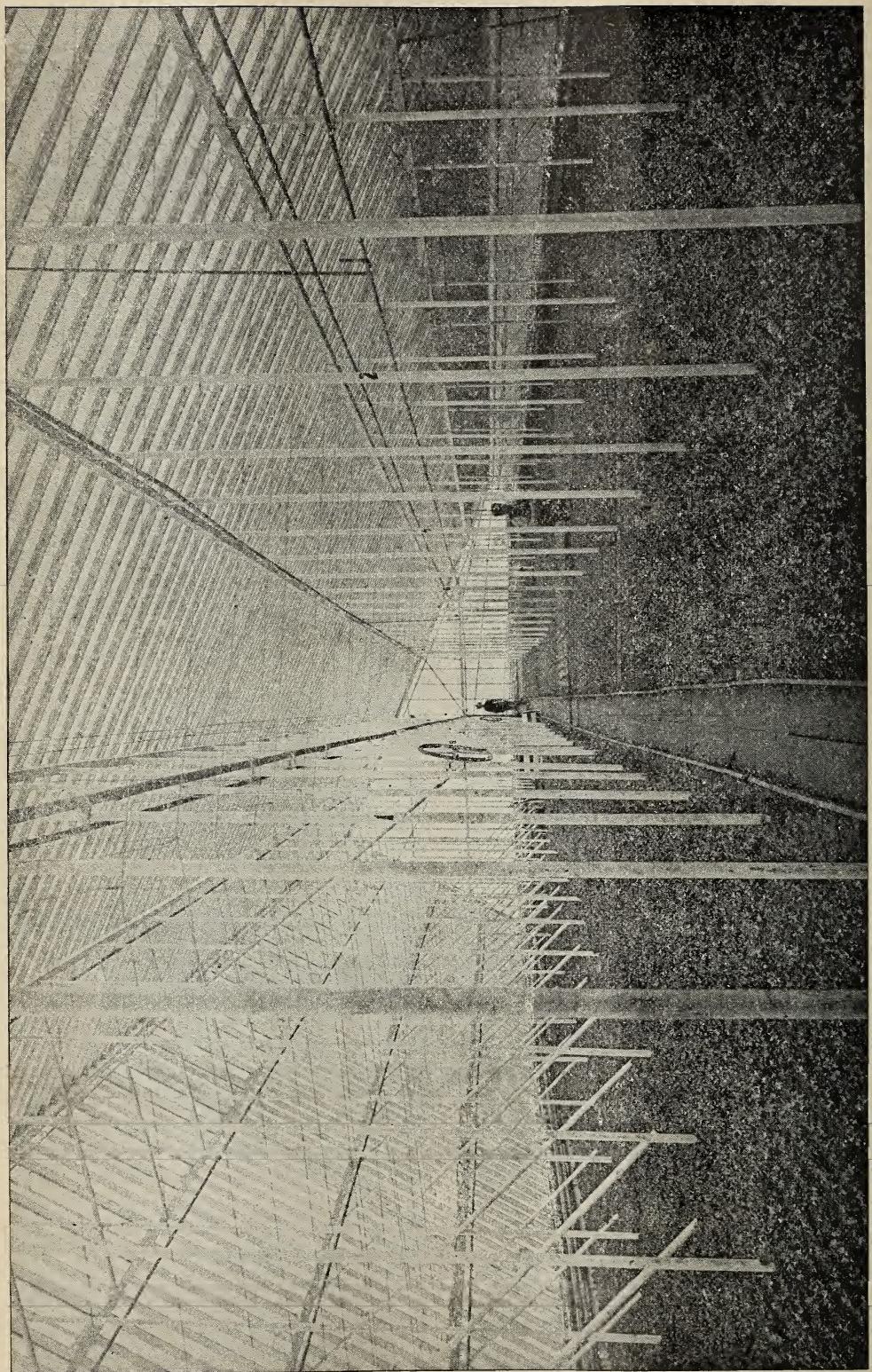
1. As you say, light in the dark months, November, December, and January, is the great problem.

2. Next, saving of glass by oval shape, which is the second point in your plan.

3. Low down to escape wind.

I send you photo of our largest house, which, so far as I know, is the best that I have seen for lettuce, tomatoes, cucumbers, radish, etc. Put this photo alongside of your picture in GLEANINGS and do a little hard thinking. My boys deserve as much credit as myself in studying out the points in our ideal house. The first house I had was even span, north and south,

INSIDE VIEW OF THOMAS SLACK'S GREENHOUSE ESPECIALLY FOR GROWING GRAND RAPIDS LETTUCE.



20×30 ft., and some sash 20×20 , arranged as by your "What to Do." The Rawsons, of Arlington, gave me the next big lift, getting me up off the ground with a house eventually 83×63 , $\frac{3}{4}$ span, 19 ft. high at peak. A good deal of hard study evolved (among the lot of us) the inclosed; and if I were putting up an acre of house it would be on that principle.

The long side to the north. The south side averages at right angles to the sun, at noon in November, December, and January.

Answer to 1.—Here, north of 45° , in cold weather frost would keep the sun out of your house till it was nearly off the east end, and at almost all times it would be at a very acute angle, either endwise of the glass or sidewise toward noon, giving quite a dense shade I should think. The bottom sash along the front would give the best possible light (average); the top part would never give its best light till the sun had got so high toward spring that whitewash would probably be of as much use as more sun. A snowfall on a mild day would not slip off very well from the top part, and in cold drifting weather would freeze on and keep most of the light out for a week at a time. To scrape it off breaks too much glass.

Now, to take up the same points in the inclosed photo. The sun starts and finishes at nearly right angles to the ends, but doesn't shine very far down the house at any time. It shines at once on all the front,

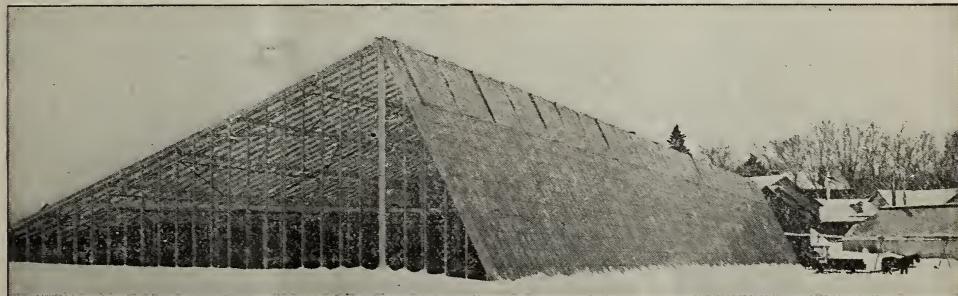
give good reasons for so thinking. The large house is 50×200 inside; walks 24 inches wide up the middle. We plant right on the ground. East and west wind can not hit it much; north ditto; south catches it well; and don't you give this idea to any one without telling him to find out how we brace against it or he will get into trouble. A shutter 3 ft. wide the whole length of the back, opened by two leaves and 22 windows in the front, operated by two wheels, give perfect ventilation. I do not know of any other greenhouse built with short side to the south, but have heard of a small one. Our Montreal competitor, Mr. Legarre, who has watched this house for three years, made five or six visits on purpose, and told me if he ever built again he would build like it.

If you can pick any thing of use to brother-gardeners out of this, do it; if not, your waste-paper basket is large enough to hold it; at any rate, I feel I have paid my debt in that line.

THOS. SLACK.

Waterloo, P. Q., Jan. 8.

Friend S, when I gave directions for making that little greenhouse I did not intend it should be a pattern for houses hundreds of feet long. I was only thinking of an amateur greenhouse for those who want it only for rec-



GREENHOUSE FOR GROWING GRAND RAPIDS LETTUCE, SHORT SIDE FRONTING THE SOUTH;
OWNED BY THOMAS SLACK, WATERLOO, QUEBEC.

first at quite an acute angle, and gradually comes around to right angles at noon, and so on till acute, and at last nearly right angles to the west end. A pipe under each stringer (five pipes) runs the whole length of the house near the glass in front (the same on the back slope, but seldom used); assisted by the sun on the outside they very soon cut the frost and let the bright sun directly in. The house is 22 feet high on the front slope. This will allow all the sun that shines on 50 feet of ground in November, December, and January, to enter without casting any shade. Later on, as the sun rises higher it shines through the back slope more each day, at an acute angle, and at a sharper angle through the front. The result is, we get all the sun possible when we most want it, and in summer so little that we don't have to whitewash; and I never remember seeing the thermometer over 95° to 100° ; back slope is 45 ft.

Answer 2.—Saving glass. Double-thick 20×20 glass for our house was only one-sixth of the total cost of house; and, while proportionately higher than yours, mostly owing to the high front, is much more than offset by extra ventilating facilities and extra sunlight obtained. As I write this afternoon, in the house after Rawson's pattern, with the thermometer outside 5° to 10° below zero, inside 50° , and nearly all pipes on, glass is a good deal frosted. Large house, no pipes on all day; back all frosted thick, front clean, with bright sun shining in; thermometer 60° . It costs us too much to save glass by building low. If the beveled corners of your house are glass it would cost more to build than to make the whole thing square. With your command of skil'd help it might be different.

Answer 3.—Low down out of the wind, and sloping so that wind does not catch. Good! first rate; get it if you can without losing too much in some other direction. I don't think you can.

Sunken paths, glass in zinc strips, and glass butted together. I think this a delusion and a snare, and can

reaction or as a side issue. The house you have so kindly described and photographed is already in use to some extent among florists; but I believe it has not found general favor. Perhaps as far north as you are it may be the best arrangement. A good many may be deterred, by the expense of the glass, from carrying it up so high, but still it may be the very best arrangement for growing Grand Rapids lettuce.

GROWING GRAND RAPIDS LETTUCE IN A HOUSE SPECIALLY DESIGNED AND BUILT FOR THAT PURPOSE.

Growing Grand Rapids lettuce, like many other things, is a great deal easier to do it when you know how than it is to describe the various operations so that another can succeed as well as yourself. Every one will not go at the same piece of work in the same way, and yet may have equally good results. Our plan, after trying many, is as follows, and the requisites are:

1. A light house with good facilities for controlling ventilation, and temperature— -40° to 45° at night, and 60° to 70° in the day time.

2. Good soil, either natural or made so by proper fertilizers, and sufficient sand to make what is called a good, quick soil. Ours was muck, a few inches deep, and the meanest kind of hardpan and stones. How brought to its present good condition is too long a story to tell.

3. The best seed that can be procured.

4. Good plants.

5. Proper and necessary precautions to keep down disease and insects.

6. Strict attention to business in hand.

Ans. 1. You have a photo and description of one of our greenhouses.

2. Make the best deep mellow rich soil you can.

3. Grow your own seed if possible; if not, get from some reliable seedsman; and don't trust him, for, with the best of intentions, he may be deceived in the seed he buys, or some mistake may be made by some of the clerks. Never trust your crop to untried seeds. Buy sufficient to have a year's supply on hand, and try a little. If it proves true to name, and a good strain, go ahead; and always keep a good supply of tested seed on hand, so that you never have to sow a seed for crop that you do not know positively is all right. We are carrying, at present, 7 lbs., and always mean to have 5 on hand. We speak very feelingly on the subject, as we got caught once by having \$1.00 worth of Black-seeded Simpson, with a sprinkling of Grand Rapids seed in it, sent us instead of Grand Rapids, as ordered. The consequence was, that we had to stand a loss of nearly \$300, and were exceedingly fortunate at that. As \$1.00 worth of seed will grow a crop that will sometimes sell for \$200, a man is simply reckless who takes any risk he can avoid.

4. I wonder if you know just how good a thing you gave to the public in your "What to Do" when you described the Utica lath tomato-box. It is the backbone, not only of our plant business, vegetables, and annuals, that we sell in the spring, but we use them for all our lettuce, celery, and cabbage plants, etc., for our own business. We use about 300 of them every year, some of them many times. Many would think them too fussy and notional, to use because they do not know how to use them.

All our potting earth (rotted sods, mushroom manure, and washed lake sand) is got ready and put in in the summer after shoveling through a one-inch screen. When wanted for use in winter it is shoveled into a sieve having half-inch mesh, hanging from the roof. The boxes are filled from this, and put, 200 at a time, into a box lined with galvanized iron, and steamed two hours. Whatever may happen afterward, the lettuce sown in these boxes starts free from disease and insects of any kind, which is quite important, and it is a pleasure to see benches full of boxes or pots, and not a single weed growing in them. Time saved in weeding is as much as time required in steaming. Eight benches stand at the end of one house, each 6' x 26 ft., made of cement, with sides three inches deep. In these the boxes are placed, and can all be watered perfectly by flooding the bench. Seedling lettuce, when large enough, are transplanted 32 into a box, and left till large enough to be transplanted into the ground as required, 6x6 inches. Boards a little smaller than the inside of the box, with wire nails driven through them, are used to space the plants correctly, saving a good deal of time and giving each plant its exact space.

Now, having plants all nicely grown in these boxes, to just dig them out as every one I have seen, outside of our own people, does, simply throws away one of the great advantages of the box; i. e., having your plants with roots almost undisturbed, and a lot of earth with them.

Pick the box up, and bump first one end and then the other on the ground: this loosens up the whole mass of earth. Stand the box on end; place the flat open hand over the top end of the box, and tip half of the earth and plants out into your hand. You can now break each plant with the earth that belongs with it, and disturb it very little; the other half of the box can be done in the same way. A little practice is required to do a nice job quickly. A large box can not be worked in this way.

5. Sulphur and lime or whiting^a, a part of the steam-pipes painted once a week with the above, thinned to the proper consistency with water, and the temperature 40° to 45° at night, and 60° to 70° in the daytime, insures us against mildew; letting the temperature run too high at night will almost certainly bring trouble. Tobacco-stems put through a hay-cutter, scattered freely on the ground, and a quantity burned each week, settles the question of green aphid.

6. There is no royal road to lettuce-growing. If you do not know your business, and attend to it, you will feel it in your pocketbook sooner or later.

Waterloo, P. Q.

THOS. SLACK.

I am greatly pleased to know that you have found that little plant-box a good thing; and your arrangement for killing both insects and weed seeds by steam heat is exactly what I wanted to know about. In fact, it gives me new enthusiasm in greenhouse work to read

your description. I have just had a lot of these little boxes made, and find them exceedingly handy for seedling coleus and salvia plants when they are put in thumb pots or even two-inch pots. A dozen pots or more can be carried anywhere in one hand. Let any florist show his customers a box of a dozen seedling coleus-plants, like some we have now, and I am sure they would sell quickly for half a dollar. That would be less than five cents each plant, pot and all.

Let me explain again to our readers that a single lath, costing but little more than a quarter of a cent, will make the entire box all but the ends. Take a four-foot lath, cut it into four equal pieces, then with a thin buzz-saw split each piece edgewise. Now get some ends of half-inch lumber, 3 inches wide and 6 long, and you will be ready to nail up the boxes. It was originally intended to hold a dozen tomato-plants; but all kinds of vegetable-plants can be grown and sold in these boxes. Our Ohio Experiment Station folks have used and recommended similar boxes for years in connection with sub-irrigation in the greenhouse. The boxes of plants are placed in a watertight bench such as has been described, then water is let in until the ground in each box is properly soaked from below without letting any water touch the leaves of the plant at all, where for any reason it is not deemed advisable.

A BOX FOR STARTING CUTTINGS TO BE USED IN A WINDOW.

So many are asking about my forcing-bed, and whether a similar one could be used for house-plants, I will explain briefly. For forcing cuttings, we must not only have a high temperature, say between 70 and 80, but we want the air confined by a pane of glass right over the cuttings, so as to hold in the dampness. The air must be moist, and the soil warm. Get a pane of glass any size, the larger the better, because you can then have more plants. Find a box to fit it, or make one if necessary. Better have the glass framed and hung on hinges over the box like the cover of a trunk; then it will be so much handier to open and close. Inside of the box put a pan or earthen dish to hold the moist sand or jadoo fiber, or, if you choose, a mixture of both. A deep saucer or sauce-dish will answer, but round dishes waste room. I use square deep sauce-dishes. Put in your cutting or slips so that just one or two leaves are out of the wet soil. Raise up your dishes until they are close to the pane of glass. Now your heat should be applied at the bottom. A small lamp may be used. You want the air inside of the box warmer than the air in the room. This will keep moisture standing on the under side of the glass. The cuttings will bear a temperature a great deal lower than 70; and even if it sometimes runs up to 90, no harm is done. If it gets too low, of course they do not make as much progress. When the weather is very damp they will need ventilation or they may mold or rot. You will learn to manage this by practice. When the plants get up so as to touch the glass, lower the saucers.

As an illustration of what such an apparatus

will do, yesterday a friend sent me some cuttings in a letter by mail. They were so much dried up I had hardly any hope that any of them would live. But I put them in one of my saucers, and forgot all about them. This morning, before it was quite daylight, I looked through the glass, and saw a new plant I had never seen before. At first I thought somebody had placed it there to give me a surprise; and then I remembered my wilted dried-up cutting. It had risen up during the night, spread out its branches, and there was a beautiful little plant two or three inches high, apparently in full vigor. All the rest of the cuttings had revived more or less, and I think all will grow. It seems almost miraculous that such things can be so quickly restored to life and vigor.



CATALOG FOR 1900.

We have printed, made up, and either mailed or shipped to our dealers, a total of 90,000 catalogs during the month of February. Before we reach the end of our list we will print about 50,000 more, most of which we hope to get off during the next two weeks. After the first of April we begin work on another edition of the A B C of Bee Culture, as the last edition of 5000, completed last October, bids fair to be all sold before we can get another finished this summer.

CHOICE EXTRACTED HONEY.

We are sold out of comb honey, but we still have some 60 cases of Utah extracted honey in 60-lb. cans which is very fine, and we should be pleased to hear from any who are in need of such honey to supply their trade. It is some time yet before new honey will be on the market, and in the mean time we desire to dispose of present stock. If interested, write for sample, naming quantity you can use.

BUSINESS AT THIS DATE.

While we are not crowded with orders as we were one and two years ago at this time we nevertheless have enough to keep us comfortably busy, and we have shipped five more carloads than we had shipped up to the same date a year ago. We have orders in sight pretty well filled, and are ready to furnish goods in large or small lots on short notice. When you decide what you need, let us show you how promptly we can supply it.



PATENTED JULY 12, 1887.

WAKEMAN AND CROCKER SECTION-PRESS.

This is a tool for folding or driving together either the one-piece or four-piece dovetailed sections, and was quite prominent years ago, selling for \$2.50 each. We have a few of them on hand which we shall be pleased to furnish to those who can use them at \$1.50 each, shipped with other goods.

MASON FRUIT-JARS ADVANCED.

Since printing and distributing most of our catalogs for this year we have received new prices on Mason fruit-jars just issued by the manufacturers, which are \$1.25 to \$1.75 per gross more than we paid a year ago. There appears to be a combination among the factories making jars, which has brought about the new prices. We still have quite a little stock of pints and quarts, but the half-gallon size is exhausted, and we can not buy new stock and sell at prices in our catalog, but will have to ask an advance of 75 cents per gross on pints and quarts, and \$1.50 per gross advance

on 2-quart. The new table of prices will be as follows:

Pint Mason jars,	55c	doz.;	6 doz.,	\$3.20;	12 doz.,	\$6.00.
Quart	"	58c	"	3.35;	"	6.25
½-gal.	"	80c	"	4.40;	"	8.50.

These are all packed one dozen in a case, and have aluminum caps. There is likely to be an advance in No. 25 jars and tumblers before long. We still have a good stock, but manufacturers are asking higher prices.

Special Notices by A. I. Root.

JADOO FIBER, PRICES OF, ETC.

This fiber comes from the manufactory in sacks holding about 125 lbs. each, and the price is 2 cts. per lb. In smaller lots than a 125-lb. bag, the price is considerably more; and the manufacturers object to our selling it to our friends at less than their advertised prices. We are at liberty, however, to do this: To every one who sends us \$1.00 for GLEANINGS we will send him 20 lbs. (\$1.00 worth at price charged for small quantities) of jadoo free of charge. This amount is heavy enough to make a freight shipment; and if it can be sent with other goods, that will make the expense still less. You will readily see that no one can afford to pay postage or express charges on an article that costs only 2 cts. per lb. Of course, we send a small sample by mail free of charge, but this is intended only for a test. If you have already paid for GLEANINGS, pay in advance for another year, get a subscriber somewhere, or make somebody a present of a year's subscription. This will be really your cheapest way to get the jadoo, for the manufacturers charge \$1.10 for a 25-lb. box of the material. If you do not think you want 20 lbs., get your neighbors to club together with you. I think you can use 25 lbs. very quickly; and after you have tried it a little, I am sure you and your neighbors together can use a sack.

A special rate to florists on application.

For greenhouse work we rub the material through a coarse sieve. This sifting process works better when the jadoo is pretty dry; then with the same sieve mix it thoroughly with more or less sand or rich garden soil as you choose.

A NEW BOOK ON GREENHOUSE MANAGEMENT.

Ever since Prof. Taft, of the Michigan Agricultural College, put out his book on greenhouse construction, he has been considered authority; and when the O. Judd Co. gave notice that he was at work on a book entitled "Greenhouse Arrangement," I knew we should have something strictly up to date. The book covers the whole ground of fruits, flowers, and vegetables under glass; and the best part of it is that Prof. Taft has visited the most skillful growers in each line of work, and has given us beautiful half-tones of the contents of their greenhouses. The paper and print are just fine. The book contains 400 pages, and is "chockful" of beautiful half-tone illustrations. By the way, these half-tones are worth ever so much more to me than ideal pictures. Years ago, when I got a glimpse of Eugene Davis' greenhouse, full of Grand Rapids lettuce, what I saw in one minute by the light of a lantern was worth to me a hundred dollars or more, because it demonstrated at once what was possible to be done with that plant inside of a greenhouse. Well, this book of Prof. Taft's tells you dozens of times, by its half-tone pictures, what is possible in the way of a crop or what is possible with ornamental flowers or decorations. I said to myself again and again, "Oh! is it possible the little plant I have in my greenhouse may produce such a wonderful sight as I see in this half-tone picture."

Speaking of Grand Rapids lettuce reminds me that there is a whole chapter devoted to lettuce-growing under glass. It discusses growing in pots instead of beds; tells us what has been accomplished in the way of pushing the crop by means of electric lights, etc. The chapter on growing cuttings from different sorts of plants was especially helpful to me, as was also the one on insect-enemies in the greenhouse, and the preparing of pot soil and using fertilizers, both animal and chemical. Growing strawberries and other fruits under glass receives considerable attention.

The price of the book is \$1.50; but we have arrangements where we can furnish it together with GLEANINGS for only \$1.75. If you have already paid for GLEANINGS we will mail you the book for \$1.25. To one who is an enthusiast in growing stuff under glass, the book ought to be worth a dollar just to look at the pictures.

Wants and Exchange.

Notices will be inserted under this head at one-half our usual rates. You must say you want your ad. in this department, or we will not be responsible for any error. You can have the notice as many lines as you please; but all over ten lines will cost you according to our regular rates. We can not be responsible for dissatisfaction arising from these "swaps."

WANTED.—To exchange modern guns (breech-loading) for old flint lock guns and fine-type muzzle-loaders, and old-style 8 day clocks with moon and date. W. S. AMMON, 216, 218 Court St., Reading, Pa.

WANTED.—A young man with small family, who understands bee-keeping. Must be of good character. Good place for the right man.

S. M. ALEXANDER, Kearney, Neb.

WANTED—By active young man of 20, strictly temperate, work by the month; had some experience with bees. CHAS. L. MANLEY, Yale, Mich.

WANTED—To exchange, 125 Falcon surplus cases and 2 Daisy foundation-fasteners, for maple sap evaporator or sap-buckets, or 32 repeating rifle.

HARRY BEAVER, West Groton, N. Y.

WANTED—To exchange, 2 nearly full-blooded, 20 months old, partly broken beagle hounds, valued at \$5.00 each, or both \$9.00, for a portable forge and fixtures, or offers. GARDINER L. ELLIS, Millsboro, Del.

WANTED—To exchange, an Aspinwall two-horse potato-planter, as good as new, for bees, honey, or supplies; or would sell cheap.

ED. WILKINSON, Wilton, Wis.

WANTED—To buy good second-hand modern bee-keepers' supplies. Give full description and price f. o. b. C. L. MICHAEL, Upton, W. Va.

WANTED—A man with a family to work on a farm and to take care of stock; one handy with tools, and to help in bees. DAVID H. COGGSHALL, West Groton, N. Y.

WANTED—Position to work in apiary, in any locality. B. W. WELTMER, Pleasant Home, Wayne Co., Ohio.

WANTED—Second-hand 5-horse engine; in cash, trade, or monthly payments. G. ROUTZAHN, Menallen, Pa.

WANTED—To exchange, a good 44-caliber Remington pistol, with reloading tools, belt, and whole outfit, which cost \$24, for wheel or beeswax. Also a full-bred fox-terrier pup from mother that won first prizes, for wheel or any thing useful.

A. P. BENDER, Rutherford, N. J.

WANTED—To exchange for lumber or Danz. hives or offers, one planer, one automatic V-groove section-machine; one dovetailing machine; one saw-table, cut-off and rip combined. E. N. FURAY, Forgy, O.

WANTED—A position with some bee-keeper by a young man. Write for terms and references. W. A. DUNLAP, Dunlap, N. C.

WANTED—To exchange, 4×5 Kodak, Singer sewing-machine, and bicycles, for Barnes or Union saws, emery grinders, etc. ROBERT B. GEDYE, LaSalle, Ill.

WANTED—To exchange, dried specimens of *Apis dorsata* and other wild bees for specimens of American wild bees and wasps, especially live queen humble-bees.

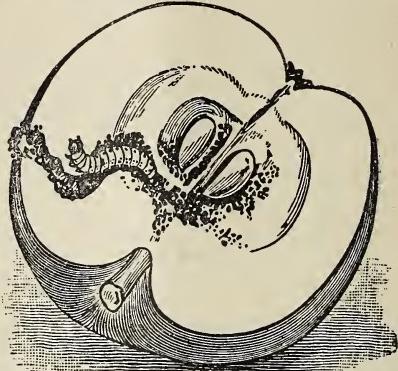
F. W. C. SLADEN
(known to The A. I. Root Co.),
Ripple Court, near Dover, England.

WANTED—To exchange for honey or offers: One dovetailing machine, one drum sander, one stick-er, one cutter-head for cutting entrances in sections, one planer, 24-inch, double cylinder; all in good condition. Address WM. H. BRIGHT, Mazepa, Minn.

Sharpless Cream Separators—Profitable Dairying.

SPRAYING FRUIT-TREES.

The question of spraying fruit-trees to prevent the depredations of insect pests and fungus diseases is no longer an experiment but a necessity.



Our readers will do well to write Wm. Stahl, Quincy, Ill., and get his catalog describing twenty-one styles of spraying outfits and full treatise on spraying the different fruit and vegetable crops, which contains much valuable information, and may be had for the asking.

BEES AND QUEENS.

Either Golden Italian, 3-banded Italians, or Holy Lands, your choice. Nothing but the best of stock bred in 3 different yards, several miles apart. Send for circular and price list. It gives methods of queen-rearing, honey production, etc. Prices, either race: Untested, March, April, and May, \$1.00 each; 6 for \$5.00, per dozen, \$9.00. Tested, \$1.50; 6 for \$8.00; per doz., \$15.00. Untested, June, July, Aug., and Sept., 75c; 6 for \$4.25; per doz., \$8.00. Tested, \$1.25; 6 for \$6.75; per doz., \$12.00. Special discount in large quantities. Breeding queens a specialty.

O. P. HYDE & SON, Hutto, Texas.

REMOVED!

EARLY QUEENS. W. H. Laws has removed his entire queen-rearing aparies to Round Rock, Texas, where he will be better fitted than ever to fill orders for the LAWS strain of FAULTLESS 5-BANDED bees the coming season. BREEDING QUEENS always on hand. Price \$2.50 each. I am also breeding the leather-colored stock from imported mothers. Tested queens, either strain, \$1.00. 6 for \$5.00; untested, 75c; 6 for \$4.00. Queens ready in season.

W. H. LAWS, Round Rock, Texas.

Olive Oil. This oil is of fine quality, and guaranteed absolutely pure; try it. Extracted by myself. Case of 2 doz. bottles—2 gals—\$10.00; case of 1 doz. bottles—2 gals.—\$9.50; case of two 1 gal. cans, \$8.50. All f. o. b. here. Sample on application, 15c.

A. B. GURR, Merced, Cal.

WE HAVE A PLAN for supplying religious literature at a cost of only 25 cts. for \$1 worth. Drop us a card for full particulars.

PICKETT PUB. CO., 307 W. Jefferson, Louisville, Ky.

QUEENS THAT EXCEL are the kind you want, the kind I rear. I am booking orders for them now. A fine lot of tested, select tested, and breeding queens on hand. They were reared under most favorable conditions from selected cells; only the best virgins were used. These select tested and breeding queens are the cream of the lot. A postal now will bring my catalog, when issued, with full particulars and prices.

J. B. CASE, Port Orange, Fla.